MONITORING STYLE DRIFT:

EVIDENCE FROM U.S. EQUITY FUNDS

Meinanda Kurniawan

B. Eng (Industrial Engineering) *Telkom Institute of Technology, Indonesia*
MBusIT *University of Melbourne, Australia*
MBus(AppFin) *Queensland University of Technology, Australia*

Submitted in fulfillment of the requirements for the degree of

Master of Business (Research)

The School of Economics and Finance
Faculty of Business
Queensland University of Technology
Brisbane, Australia

November 2013

Keywords

- mutual funds
- fund governance
- board quality
- corporate culture
- manager compensation
- manager ownership
- regulatory history
- fund stewardship
- Morningstar stewardship grades
- investment style
- style drift
- style consistency

Abstract

This thesis provides the first evidence showing that the quality of fund stewardship matters to fund style drift. Based on 464 open-ended U.S. equity funds from 2007 to 2011, we find a negative association between overall stewardship and the holding-based measure of style consistency and style dispersion in the size dimension. In comparison, stewardship component measures, including fees, regulatory history, manager compensation, manager ownership, board quality, and corporate culture are more significant in explaining the style drift in size, value-growth, or overall dimension. We find that managerial compensation and ownership have opposing effects on style drift and should therefore be treated separately in tests of fund stewardship.

Table of Contents

List of Tables

Statement of Original Authorship

The work contained in this thesis has not been previously submitted to meet requirements for an award at this or any other higher education institution. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made.

Signature: **QUT Verified Signature**

Date: 19 November 2013

Acknowledgement

I would like to sincerely thank Professor Janice How and Associate Professor Peter Verhoeven for their support and research supervision. I also thank the School of Economics and Finance for financial support to cover my living expenses; QUT Business library for purchasing Morningstar Direct database; and participants at the 61st Annual Meeting of the Midwest Finance Association (MFA) in New Orleans in 2012 and the 3rd Financial Markets and Corporate Governance (FMCG) Conference in Melbourne in 2012 for their valuable feedback and suggestions.

CHAPTER 1

INTRODUCTION

1.1 Background

Style drift refers to a situation where a mutual fund deviates from its stated investment style or objective and shifts towards another investment style.[1] Since Sharpe (1988) introduced a technique to analyze fund managers' actual style using fund return series as a substitute for limited data on actual portfolio holdings, style drift has been discovered repeatedly in a number of mutual funds.[2] This finding raises concerns among investor advocacy groups and financial planning professionals since style drift is thought to bring great perils to fundholders. In fact, those groups and associations[3] petitioned the Securities Exchange Commission (SEC) to require mutual funds to disclose complete portfolio holdings more frequently with the aim of exposing any style drift.[4]

---

[1] Style drift is also known in literature as style shift, style volatility, style switching, style gaming, style misclassification, style inconsistency, and risk-shifting activity. Style is commonly used by investment consultants to delineate different investment products such as size and value-growth. Fund style describes stock holding characteristics of the fund and has become important information for investors in selecting a fund (Del Guercio and Tkac, 2003).

[2] For example of funds that exhibited style drift, see "*Franklin Mutual stays strictly within its value mandate as some peers stray"* in CNNMoney (20 August 1999).

[3] Among those groups and associations were International Brotherhood of Teamsters, American Federation of Labor and the Congress of Industrial Organizations, National Association of Investors Corporation, Consumer Federation of America, Financial Planning Association, and Fund Democracy, LLC.

[4] See Shareholder Reports and Quarterly Portfolio Disclosure of Registered Management Investment Companies (2004) adopted by SEC.

Even after the SEC enacted quarterly portfolio disclosure requirement in 2004, style drift still plagues the industry. SPIVA scorecard[5] shows that almost half of U.S. equity funds exhibited investment style drift over the period from 2005 to 2009 (S&P Dow Jones Indices, 2010). To tackle this issue, the SEC reorganized its enforcement division in 2010 to increase scrutiny of the industry, with containing style drift being one of their priorities[6] (Rothstein, Kass & Company, 2011). In 2012, the SEC brought litigations premised on style drift allegation against a number of fund management companies, including Top Fund Management and Solaris Management. Top Fund Management, for example, was found to have failed to follow the fund investment objectives, and as a sanction, the SEC barred its manager from working with any registered investment company (SEC, 2012).

Style drift in mutual funds has also attracted much academic interest, with evidence that fund managers straying from their declared investment style documented in several studies (e.g., Brown, Harlow and Zhang, 2012; Wermers, 2012). Researchers argue that the motivation behind style drift is driven by fund managers' desire to chase short-term outperformance over their rivals (Brown, Harlow and Starks, 1996) and to attract new asset flows and earn greater income for themselves (Chevalier and Ellison, 1997). While

[5] Standard & Poor's Indices Versus Active (SPIVA) scorecard is designed to provide objective comparison of funds' performance versus their appropriate style indices. This scorecard also measures style consistency for each style across different time horizons (Standard & Poor's Financial Services, 2013).

[6] SEC deems it a fraud if firms and managers engage in misrepresentations to investors about critical attributes including performance, assets, liquidity, investment strategy, valuation procedures, and conflicts of interest (SEC, 2011).

the impact of style drift on fund returns is still unresolved in the literature,[7] its effect on fund risk is certain. Because the portfolio of the drifting fund is weighted with assets belonging to other styles, the portfolio is exposed to inappropriate type of risk resulting in an unexpected risk/return tradeoff for the fundholders. As a consequence, style drift brings about an expected utility loss to the fundholders (Tkac, 2004), and potentially results in a real economic loss in extreme market condition. [8] For instance, when over a quarter of Fidelity Magellan's (large-cap fund) assets were shifted from growth stocks to bonds and cash in early 1996 (bullish market), its fundholders' returns underperformed its benchmark by over 10% for the year. Another notorious example is Legg Mason Value Trust (value fund) which produced a staggering loss of 23.7% per year from 2006 to 2008 (bearish market) due to the significant portion of high-tech (growth) stocks in its portfolio.

In the above cases, fundholders might presume that their capital had been invested in accordance with fund declared style, and as a result, were prepared to bear (or supposedly diversified away) only the risk associated with their preferred style. When fund managers act in their own interests and deviate from the mandated style, fundholders bear the unexpected risk introduced by managers into the portfolio. In sum,

[7] Wermers (2012) finds that actively drifted funds outperform their counterparts, which is on the contrary to Brown, Harlow, and Zhang (2012) who find style consistency is positively related to future performance.
[8] To be deemed a fraud by SEC, style drift does not need to have resulted in realized underperformance. In fact, any performance that appears inconsistent with a fund's investment strategy forms a basis for further scrutiny by SEC (2011).

fund managers who drift from the stated investment style pursue their own benefit to the detriment of fundholders – this, in essence, is an agency problem in mutual funds.

Fundholders want to own a well-diversified portfolio, which will help to reduce their risk and provide a more consistent rate of return through all kinds of market cycles. To achieve this outcome, they will need to combine funds with less than perfectly correlated investment styles.[9] This can only be achieved if the fund manager maintains an investment strategy in line with the fund's mandated style. If the fund style drifts, say from small cap to large cap, fundholders may unexpectedly find themselves with an under-allocation to small-cap stocks and an excess of large-cap stocks, thus violating their aim of maintaining a well diversified portfolio. Further, fund performance evaluation is normally based on style so that if fund managers were to drift, measurement of the performance of the fund will be inaccurate. There is also evidence showing that fund managers who stick to their style tend to be better performers than those that drift (Brown, Harlow and Zhang, 2012; Huang, Sialm and Zhang, 2011).

The Securities Act (1933) made mutual fund companies legally responsible for the reliability of information disclosed in their prospectus, including information on fund investment style. It is common to see equity funds indicate the investment style in their

[9] Although mutual fund industry offers a wide selection of equity funds to meet almost any particular investor preferences, only a small number of fund investors hold a single fund and directly delegate management of their fund to a single fund manager. Investment Company Institute [ICI] (2012) finds that mutual-fund owning households own 4 mutual funds on average, and 80% of them purchase the funds through advisers. Investors obtain financial advice from professional financial advisers to establish appropriate asset allocation, select suitable mutual funds, facilitate fund purchasing, as well as to review and adjust the their fund portfolio periodically (ICI, 2007).

name and/or state it explicitly as the investment strategy in their prospectus. To protect fundholders from misleading fund names, mutual fund companies that have a specific style stated in their name are required by law to invest at least 80% of their assets according to that stated style (Investment Company Names, 2001). For example, XYZ Large Cap Growth Equity Fund is required to invest at least 80% of its assets in large cap growth stocks and the remainder elsewhere.

The Investment Advisers Act and the Investment Company Act do not explicitly require fund managers (and the board) to control and monitor the fund investment style. However, both laws reinforce the fiduciary duties of fund managers and the board to act in the best interest of their fundholders.[10] In the same way, the SEC (as cited in North American Securities Administrators Association, n.d.) affirms that one of the fund manager's fiduciary duties is to make reasonable investment decisions based on several factors including the fundholder's investment objectives. Likewise, the Independent Director Council (IDC, n.d.) views an oversight duty of the fund board is to monitor various fund matters including monitoring performance and risk that are closely related to the fund investment style.

---

[10] For example, *Russell Investments* states that **"**Many changes can occur in funds, and investors aren't always aware of them. A manager may leave a firm, or a manager might alter their investment style unexpectedly. For these reasons, Russell continuously monitors its managers to make sure they stick to their assignment, replacing them if necessary. This way, your investment stays on track with your goal." (http://www.russell.com/ca/education_centre/investment_approach/multi_manager/default.asp)

Despite these efforts, managers have been found to change their mandated strategy in the hope of recovering from past losses or go with the flow and adopt whichever style that was successful recently (Chan, Chen and Lakonishok, 2002). Kim, Shukla and Tomas (2000) find only 46% of a sample of 1,043 funds had investment attributes that are consistent with the fund's stated objectives. [11] Over the three-year period covered by the study, 57% of surviving funds changed their investment style at some point, with only 27% held their investment attributes constant. Similar findings are documented by Frijns, Gilbert, and Zwinkels (2012).

Style drift is thus perennial as it shares the same root problem (i.e., agency conflicts between fund managers and fundholders) as major scandals that have repeatedly occurred in the mutual funds industry. [12] In the past, these conflicts have severely betrayed investors' trust in the mutual fund industry. To rebuild investors' confidence in the industry, regulatory authorities and mutual fund companies have put their foot forward and strive for better governance.

---

[11] It is possible for equity funds to drift away from the stated style for several reasons. First, the drift may arise from the fund manager actively seeking investment opportunities outside the fund's stated style. This type of drift can occur without violating the Investment Company Names Act as long as the percentage of the investment of the fund's asset in other investment styles is less than one-fifth. Second, style drift can occur passively or naturally. For example, a small cap fund which has stock holdings growing into mid-cap size stocks will experience a passive style drift if the manager of the fund does nothing to rebalance its stock holdings. One possible reason for this is that the fund manager may hesitate to sell a stock which has outgrown the stated style, perhaps because the stock has been performing well or there is not enough investment opportunity in the initial fund style to substitute the grown stock. Fund managers can let this drift occur without violating the Securities Act if they put a special clause such as "market value at the time of purchase" in their prospectus.

[12] The first major abuse, which was widely perpetrated in the 1920s and 1930s, involved self-dealing transactions and excessive fees. The greatest scandal in the U.S. mutual fund history occurred in 2003-2004 and it involved some of the largest mutual funds allowing particular fundholders to perform market timing or late trading strategies.

At the industry level, the U.S. authorities undertook several financial reforms to reduce agency problems in the mutual fund industry and to provide greater investor protection. Following the frauds in the 1930s, the Congress decided to regulate the mutual fund industry by enacting the Investment Company Act of 1940. The focus of the Act was on the fiduciary duty of fund management companies and it included provisions for mutual fund governance such as board structure and disclosure. The well-known fund management scandal in the 1960s[13] resulted in amendments to the Act through the imposition of stricter standards of fiduciary duties on fund managers and the board of directors. In response to the 2003-2004 market timing and late trading scandals, the SEC enacted a number of new rules to foster better stewardship in the mutual fund industry through higher standards of fund governance as well as enhanced disclosure so as to ensure that fund managers and the board fulfill their responsibilities to meet the fund's investment objectives.

Regulation-imposed governance at the industry level sets forth the minimum standard for all fund companies in the industry. At the fund level, each mutual fund may adopt a standard (high or low) of governance to suit its specific situation and needs. For example, although the SEC requires a simple majority of independent directors, some mutual funds adopt a supermajority (two-thirds or more) of such directors coupled with

[13] The scandal in the 1960s involved fund management favoritism toward one big off-shore fundholder who provided a significant source of income to them and harmed many fundholders.

an independent board chair in order to attain better stewardship and thus better serve their fundholders. Therefore, even with the regulatory standards of fund governance, there are varying degrees of stewardship quality among mutual funds.

Benefiting from higher standards of governance, a fund with better stewardship should have better ability to curb agency problems and has lesser agency conflicts than their counterparts with lower stewardship. Since style drift roots in agency conflicts, we argue that the quality of fund stewardship matters to the level of style drift.

1.2 Research Aims and Motivations

Fund governance and stewardship has attracted much attention from independent research companies, investors, and academia. Independent research companies such as Morningstar, for example, have been assessing and awarding grades on fund stewardship since 2004. Investors too consider the quality of fund stewardship important in making their fund selection decision (Lai, Tiwari, and Zhang, 2010). This comes as no surprise since fund survivability and performance have been found to be associated with the quality of fund stewardship (Morningstar, 2011).

The academic literature has also seen considerable growth in fund governance research. Most study the relationship between fund governance and a specific fund characteristic such as fund fees, fund performance, fund flows, and fund managers' actions. This thesis adds to this line of study by examining the relationship between fund

stewardship and style (or strategy) drift. It argues that the quality of fund stewardship has an influence on the intensity of style monitoring and ultimately the level of fund holdings dispersion and style drift. We address the following key questions: (i) Does the quality of fund stewardship matter to the level of fund style drift and style dispersion? (ii) Which fund stewardship component(s) explains fund style drift and style dispersion? and (iii) Which dimension of style drift and style dispersion (i.e., size or value-growth, or both) is most strongly linked to fund stewardship?

1.3 Summary of Results and Contributions

We use Morningstar Stewardship Grades (originally called Fiduciary Grades) to measure the quality of fund stewardship, and Morningstar Style Dispersion Metric to evaluate fund style dispersion. Fund style drift is measured using both returns-based and holding-based style analysis approach.

Based on a sample of 464 US equity funds, we find limited evidence of an inverse association between overall fund stewardship and various measures of style consistency and dispersion; the holding-based measure of drift and fund holdings dispersion in the size dimension are exceptions to this. However, the results are much stronger for stewardship component measures. In most specifications, we find fund fees; whether there have been any regulatory issues at the fund company in recent years; managerial incentives and its subcomponents (manager compensation and manager ownership) are

all strongly related to style drift. Board quality is significant in explaining the holding-based style consistency in the size dimension and style dispersion in all dimensions. There is also evidence that corporate culture is significant in explaining style dispersion in the size dimension. In sum, we provide convincing evidence that better stewardship in the form of higher manager compensation and better board quality can ensure that fund managers and fund boards perform their fiduciary duties, particularly in relation to increased monitoring of the fund investment style that ultimately will result in lower style drift.

Apart from providing the first evidence on the relationship between the quality of fund stewardship and the level of fund style drift and dispersion, our study also contributes to the research methods employed in this line of investigation. By utilizing the numeric scores on individual components of fund stewardship instead of ordinal stewardship grades provided by Morningstar, we are able to compute a finer stewardship measure. Our contribution also lies in the decomposition of the fund manager incentives score into its sub-components: manager compensation and manager ownership. Our results show that these sub-components have opposite impacts on fund style drift, which would otherwise have been left unidentified if the component grade or score were used instead. Further, in using a number of style drift measures, we are able to discover the association between fund stewardship and various ways of style monitoring. Finally, we

are the first to decompose fund style drift into two dimensions – size drift and value-growth drift – as well as to use fund style dispersion metrics that enable us to analyze fund style monitoring in terms of stock holdings dispersion.

1.4 Chapter Layout

The rest of the thesis is organized as follows. Chapter 2 reviews the literature and Chapter 3 presents the testable hypotheses on how high stewardship quality can curb style drift. Chapter 4 describes the data including the sources in the study. Empirical results are discussed in Chapter 5, and a summary and conclusions are provided in Chapter 6.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter provides a review of the empirical literature on investment style drift and mutual fund governance. Section 2.2 briefly discusses agency conflicts and fund managers' risk taking. Section 2.3 reviews the extant literature on investment style drift, followed by Section 2.3 which discusses studies on mutual fund governance. Section 2.4 summarizes.

2.2 Agency Conflicts and Risk Taking by Fund Managers

The relationship between investors (fundholders) and managers in mutual funds can be described as a relationship between a principal (investors) and an agent (fund manager). Agency problem arises when these interests are misaligned. While both fundholders and managers desire and benefit from fund outperformance, they are motivated by different underlying interests (Ferris and Yan, 2007a; Frankel, 2006; Mahoney, 2004) that may conflict in the way the performance is achieved (Tkac, 2004). Fundholders desire superior, long-term, 'true', and 'comparable' risk-adjusted

performance.[14] Thus, they expect that the performance is achieved by consistently investing in asset classes mandated by the fund's investment objective. In contrast, fund managers crave for short-term (less than one-year period) outperformance over their rivals (Brown, Harlow and Starks, 1996) since it will make the fund more attractive, thereby increasing investment inflows and ultimately growing the fund manager's fee-based income (Chevalier and Ellison, 1997).

These conflicts are more severe when fund managers' actual investment decisions are not observable by fundholders. The lack of transparency allows fund managers to chase short-term performance through higher risk taking (Starks, 1987), which can be achieved by deliberately shifting/tilting their portfolio risk during the interim between fund performance reports (Brown, Harlow and Starks, 1996; Chevalier and Ellison, 1997). As the actual portfolio risk is understated by the implied risk of the fund's investment objective and benchmark, the fund's risk-adjusted performance appears deceptively higher than its peers (Kim, Shukla, and Tomas, 2000). For this reason, fund managers who embark on risk shifting tend to mislead investors by presenting information that overstates fund performance (DiBartolomeo and Witkowski, 1997).

[14] Two well-known mutual fund rating systems (i.e. Morningstar Star Ratings and Lipper Leaders Rating) that are used widely as investment guide by investors and fund advisors use long-term risk-adjusted performance as the main basis for assigning ratings. Their performance evaluations are: based on actual holdings style category (as opposed to stated style) to facilitate valid comparison and ranking; and carried out over 3-year, 5-year, and 10-year period (if applicable) to reward fund with strong and consistent performance.

2.3 Style Drift

Fund managers of actively managed funds with a specific investment style are supposedly more constrained in their risk taking given that fund style delineates fund risk characteristics. For that reason, investors who want to invest in a particular style(s) would put their capital in the fund(s) with that stated investment style (Barberis and Shleifer, 2003; Del Guercio and Tkac, 2003). Such funds have become very popular among fund investors together with the rapid increase of number of funds with specific investment style since the mid 1990s.[15]

With the high popularity of style investing, some trendy managers apparently labeled their new/existing funds with a specific style to exploit this opportunity. In fact, research finds a high number of fund managers who change the name of their existing fund in order to look like the current 'hot' or 'glamour' investment style. For example, Cooper, Gulen, and Rau (2005) observe that a 296 equity funds changed their name to a "style name" (i.e., value, growth, small, or large) over the period from April 1994 to July 2001. They find that funds earn a positive abnormal inflow when they change their name to reflect the current hot style despite the fact that their previous performance was quite average and there were no actual changes in their portfolio holdings to match the new name. Interestingly, flows to those funds are also found to increase steadily over the years

[15] In 2001, SEC estimated that 83% of funds stated their investment focuses and risks (including styles) in their names (Investment Company Names, 2001).

after the name change. Their findings provide evidence that fund investors' investment decisions can be irrationally influenced by aesthetic effects such as fund declared/stated style, not the actual investment style.

Brown and Goetzmann (1997) find over the period from 1976 to 1992, there were 237 cases in which equity funds switched their fund objective and experienced an average net gain of 9.8% in ex-post performance. These cases are consistent with the anecdotal evidence that mutual funds can improve their relative performance measures by intentionally misclassifying themselves on their style. Their findings are supported by DiBartolomeo and Witkowski (1997) who report about 40% of the funds they studied delivered returns that are more typical of another style than their own. Using the return difference of the fund's declared and actual styles, they estimate that aggregate wealth overstated by style misclassification is nearly $4 billion.

2.4 Mutual Fund Governance

To help us address whether fund stewardship matters to the level of fund style drift, we review the empirical literature on mutual fund governance to gauge how effective governance mechanisms are in curbing agency conflicts in mutual funds. Two distinct strands of the research are identified. The first strand looks at the role of fund governance in aligning the interests of fund managers with those of fundholders. The second strand examines the effect of various governance mechanisms on mutual fund

outcomes using a set of governance measures provided by independent research companies such as Morningstar.

There is a large volume of research describing the role of fund governance in aligning the interests of fund managers and the board with those of fundholders. These studies attempt to find a relationship between particular governance practices and specific fund characteristics that matter to fundholders such as fund fees, fund performance, and various types of fund manager's actions (e.g., managerial herding, proxy voting, and tournament effect). Several areas of fund governance practices have been studied, including the board structure, compensation structure, director ownership, and fund manager ownership.

The role of independent directors or the chairman in defending the interests of fundholders is investigated in a number of studies. Tufano and Sevick (1997) examine the relationship between board structure and fund fees for the 50 largest fund management companies in 1992. They find that the fees charged to fundholders are lower when fund boards are smaller and have a higher proportion of independent directors. They also find funds with higher director compensation tend to approve higher fees.

Del Guercio, Dann and Partch (2003) study board structure and director independence of 476 closed-end funds offered by 105 fund management companies. They report that funds with relatively low expense ratios have a smaller board, a higher

proportion of independent directors, and relatively lower director compensation. Their results suggest that board structure and director independence are related to fundholders' interest, and that the board is an effective watchdog. Their findings are consistent with Tufano and Sevick (1997).

Ferris and Yan (2007b) use a sample of 6,228 mutual funds in 2002 to address whether board and chair independence are related to the likelihood of a fund scandal. Their series of regression analysis shows no such relationship, and that neither board nor chair independence is related to fund fees and portfolio turnover. Their results show that director compensation is inversely related to fund governance quality, measured by fees and the likelihood of being implicated in a fund scandal.

Meschke (2007) assesses how board independence and director incentives relate to fund expenses, performance, and regulatory compliance. Using a sample of 400 randomly selected mutual funds from 1995 to 2004, he finds funds that charge lower fees are overseen by an independent chair. Consistent with previous studies (Del Guercio, Dann and Partch, 2003; Ferris and Yan, 2007b; Tufano and Sevick, 1997), his findings show that funds that pay higher director compensation charge higher fees. However, there is no evidence of a positive relationship between board or chair independence and fund performance. Only director compensation is related to fund performance.

Contrary to anecdotal evidence, Chen, Goldstein and Jiang (2008) find a substantial number of directors who own shares in the fund they oversee. Further, their shareholding is greater in funds where their monitoring effort generates greater value to fundholders, such as in actively managed funds and equity funds. Their study provides new evidence of the importance of the role of director ownership in interest alignment, supporting Meschke (2007) who finds funds with a higher director ownership charge lower fees and exhibit better performance.

Khorana, Servaes and Wedge (2007) report half of all managers have ownership in their funds, and that the risk-adjusted performance is positively related to their percentage ownership. Evans (2008) reports the same. These results therefore suggest that director ownership is a powerful mechanism in aligning incentives between the fund's board and fundholders.

More recent studies examine the effect of various fund governance mechanisms on mutual fund outcomes using a set of governance measures provided by independent research companies such as Morningstar. Morningstar evaluates selected U.S. mutual funds and assigns both overall and component grades for each fund. Morningstar Stewardship (MS) Grades, which are frequently used in academic studies, are regularly updated and accessible in a database format.

Huang and Chen (2011) use MS Grades to examine the relationship between mutual fund performance and governance effectiveness. To get numerical measures of stewardship component, they convert the letter (ordinal) stewardship grade with A=5, B=4, and so on. They find managers' incentives have a strong relationship with fund returns, and corporate culture is significantly related to the fund's Sharpe Ratio. They also report that these two components and board quality reduce the fund's turnover ratio.

The role of fund governance in monitoring managerial herding is studied by Casavecchia and Tooman (2011). Using stewardship component grades for funds provided by Morningstar, they show that stronger managerial incentive schemes provide a deterrent against managerial herding strategies.

Lai, Tiwari and Zhang (2010) investigate the impact of board quality on fund flows, fund performance, and the likelihood of changes in the investment strategy. For this purpose, they use Morningstar Stewardship Grade as the basis for fund board classification, where boards are classified into "good board" if they receive good or excellent grade from Morningstar, and "bad board" otherwise. They find underperformed funds with a bad board experience significantly lower fund flows compared to those with a good board. This suggests that board quality contains information valuable to investors. They also find good performance persists in funds with high quality boards, while poor performance persists in funds with bad quality

boards. Following poor performance, funds with a bad board are more likely to change strategy.

Unlike previous studies which focus on a particular governance practice, Chou, Ng and Wang (2011) investigate whether fund governance as a whole affects the investment decisions and monitoring role of mutual funds. Based on sample of 1,137 funds, they find funds with good governance, as measured by Morningstar Stewardship Grades, tilt their portfolios toward better governed companies and tend to vote against management's proposals which are not in the best interest of fundholders. They conclude that fund governance mechanisms play an important monitoring role, with better governed funds being better at carrying out their fiduciary duties and acting in the interests of their fundholders.

2.5 Summary and Conclusion

In summary, the extant literature shows governance mechanisms can help in alleviating agency conflicts in mutual funds. To the best of our knowledge, no study has examined whether and how effective fund governance is in ensuring compliance to the mandated investment style.

CHAPTER 3

HYPOTHESES

3.1 Introduction

This thesis aims to fill the gap in the literature by developing three main hypotheses on the relationship between fund stewardship and style drift. More specifically, we investigate four fund governance mechanisms: (i) corporate culture; (ii) board quality; (iii) manager compensation; and (iv) manager ownership. Two further fund characteristics, which indicate the outcome of fund stewardship (i.e., regulatory history and fund fees) are also examined. The hypotheses are proposed in Section 3.2 while Section 3.3 concludes this chapter.

3.2 Testable Hypotheses

A mutual fund is a professionally managed company that pools funds from many fundholders for the purpose of investing in various securities. Like listed companies, a mutual fund has a board of directors which oversees the management of the fund on behalf of the fundholders. Since mutual funds typically have no employees, mutual fund companies hire external fund management companies [16] to perform day-to-day

[16] Fund management companies are also known as fund manager, portfolio manager, fund adviser, or fund sponsor.

management and operations of the funds. As a result, there is an agency relationship between fundholders (the principal) and fund managers (the agent), which potentially creates an agency conflict (Ferris and Yan, 2007a; Frankel, 2006; Mahoney, 2004).

Agency conflict occurs when the fund manager has differing and conflicting interests to those of the fundholders. Tkac (2004) and SEC Office of Economic Analysis (2006) list three sources of this conflict: (i) differences in *financial incentives* of the adviser and the fund; (ii) differences in *risk tolerance* of the adviser and the fundholder; and (iii) *cross-subsidization*, where fund managers favor one fund class (clientele) over another. Agency conflict is unfavourable for fundholders since it provides incentives for fund managers to pursue their own interests to the detriment of fundholders. Risk-shifting, for example, is a result of agency conflicts due to differences in financial incentives and risk tolerance (Tkac, 2004). These differences provide incentives for fund managers to alter the portfolio risk away from fundholders' preferences, resulting in style drift.

In the absence of costless information about the fund manager's investment decisions, fundholders have no other options but to entrust fund managers and the fund board to control and monitor the fund's actual investment style as part of their fiduciary duties. Hence, the extent of control and monitoring of the fund's investment style depends on the attainment of those fiduciary duties by the fund managers and board.

Funds that serve the primary interests of fundholders as their sole responsibility are regarded as stewardship funds (Haslem, 2009).[17] To attain good stewardship,[18] mutual funds undertake various governance mechanisms whose purpose is to align the two parties' interests so that agency costs in the fund can be minimized (Nelson, Wells, Perry and Hanson, 2004). The ultimate goal of fund governance is for the fund managers and the board to fulfill all their fiduciary duties (Radin and Stevenson, 2006), including monitoring fund investment style and compliance with regulation and fundholders' investment mandate (Miller and Phillips, 1995; Spencer, 1997). Recent studies confirm that better governed funds are better at carrying out their fiduciary duties and acting in the interests of their fundholders (Chou, Ng and Wang, 2011).

In view of this, we expect that the quality of fund stewardship has an influence on the intensity of style monitoring, and ultimately, the level of fund style drift.[19] Specifically, we argue that funds with good stewardship are more effective in monitoring fund investment style, so that such funds are less likely to drift from their mandated style. Therefore, we predict the following hypothesis:

H1: Funds with better stewardship exhibit less style drift.

---

[17] Fund stewardship refers to the quality of fund's governance practices that provide an indication of whether the interests of fund manager are aligned with those of the fundholders.

[18] Academics and mutual fund professionals develop several approaches to help investors identifying fund with good stewardship, for example, Haslem(2009)'s Five Dimensions Analysis, Morningstar(2011)'s Stewardship Grades, and Bogle(2009)'s Stewardship Quotient.

[19] The first dimension of stewardship analysis suggested by Haslem (2009) is risk/return performance. He asserts that funds should be well diversified as indicated by large R-square to the fund's style benchmark index. Therefore, he implies that style consistency is a sign of funds with better stewardship.

The underlying theory of fund stewardship is agency theory, which views the misalignment in interests between shareholders and managers as being the root of the agency conflict in the firms (Jensen, 1989; Jensen and Meckling, 1976). With insignificant ownership stake in the firms, managers have little incentive to manage the firm effectively. Corporate governance mechanism offer one way to align these conflicting interests by means of ownership structure, manager compensation structure, and board structure, among others (Jensen and Meckling, 1976).

In this study, we examine several governance practices that can potentially contribute to better stewardship, and have been widely adopted by mutual funds and disclosed regularly to the public. These practices, which we extract from Morningstar,[20] are: (i) corporate culture; (ii) board quality; (iii) manager compensation; and (iv) managerial ownership. In the following, we discuss how each of these mechanisms influences the propensity for style drift.

O'Reilly and Chatman (1996, p. 166) define corporate culture as "a set of norms and values that are widely shared and strongly held throughout the organization." Corporate culture in mutual funds is shown in the fund's focus, investment processes, expertise, interaction with investors, working environment, and offering quality. Just as corporate culture shapes the way firms conduct their business, funds' corporate culture

[20] Chapter 4 provides a detailed discussion of the Morningstar database as well as the calibration of the various stewardship mechanisms we outline in the hypotheses.

also affects their performance (Sorensen, 2002). Gottesman and Morey (2012) assert that fund culture sets the tone for the entire operation of the fund. In fact, they find funds with better corporate culture have lower expense and turnover ratio.

Among other things, there are two important attributes of funds that have a fundholder-focused culture, which are systematic investment processes and longer managerial tenure. These attributes are particularly important since they characterize the experience and stability of fund managers who run the fund.[21] Funds that frequently change their management team or have no systematic investment processes are more likely to experience inconsistencies in the execution of investment strategy. For example, Gallo and Lockwood (1999) find more than 65 percent of the equity funds in their sample experience an investment style drift after a change in management, indicating that new fund managers alter the fund's corporate culture and risk profile. Since style drift exposes fundholders' portfolio to undesired levels of style risk, they suggest that fundholders should monitor funds that experience a change in management.

Corporate culture therefore contributes to investment style consistency. That is, funds with better corporate culture are more likely to be managed by fund managers who have experience in executing fund strategy and maintaining their investment style consistency. Better corporate culture further increases behavioural consistency in a firm

[21] Experience and stability of portfolio managers are one of twelve standards in the Bogle(2009)'s Stewardship Quotient.

(Gordon and DiTomaso, 1992), thus enhancing the consistency in the fund's investment process, and ultimately, the investment style. We therefore predict that funds with better corporate culture exhibit less style drift.

H1a: Funds with a better corporate culture exhibit less style drift.

The second governance mechanism we examine is board quality.[22] The board of directors plays an important role in enhancing fund stewardship by representing the interests of fundholders. One of directors' oversight responsibilities[23] is to monitor fund performance and fees. To fulfill this responsibility, "directors should look at a fund's performance as a whole and over time, taking into consideration its investment objectives, strategies, and risks to evaluate whether the fund is meeting its stated objectives" (IDC, 2012).

Considering the importance of the board of directors in protecting fundholders, the U.S. authorities undertook several financial reforms to promote the adoption of higher standards of board structure in the mutual fund industry. The most recent standards

[22] Board quality is also referred in literature as board effectiveness.
[23] Independent Director Council (IDC, 2012) summarizes the fundamental oversight responsibilities of fund directors, comprising: oversight of fund performance and fees; oversight of distribution; general oversight responsibilities; and specific regulatory responsibilities.

enforced by the SEC are board independence[24] and the disclosure of fund ownership by independent directors.[25]

The role of independent fund board members in protecting the interests of fundholders is confirmed in a number of studies. Funds that charge lower fees have on average a more independent chair person (Meschke, 2007) and a larger fraction of independent directors (Del Guercio, Dann, and Partch, 2003; Tufano and Sevick, 1997).

Research also confirms the importance of the role of director ownership in mutual funds.[26] Meschke (2007) finds funds with higher director ownership charge lower fees as well as exhibiting better performance. His findings are supported by Cremers, Driessen, Maenhout and Weinbaum (2009) who report that funds with a lower director ownership significantly underperform. Furthermore, funds that demand greater directors' monitoring effort (such as small funds, growth funds, active-managed funds, funds with a small number of institutional investors, and funds whose money flows are sensitive to performance) typically have higher director ownership (Chen, Goldstein and Jiang, 2008). This suggests that director ownership can be used to provide incentives for directors to monitor the fund.

[24] Board independence refers to the state in which a majority of a board of directors are not interested persons as defined by Investment Company Act of 1940 (e.g. significant business partners, and family members).
[25] Director ownership refers to fund share ownership of a director in the fund he or she oversees.
[26] Director ownership is part of insider ownership standard in the Bogle(2009)'s Stewardship Quotient.

We argue that better board quality, as indicated by board independence and the percentage director ownership in the fund, contributes to better investment style consistency. First, through substantial fund ownership, directors tie their own financial interests with those of fundholders as their own personal wealth is put at risk if the fund exhibits style drift. Thus, directors have greater incentives, over and above their call of fiduciary duties, to monitor managers (Bhagat, Carey and Elson, 1999; Mehran, 1995).

Second, greater independence strengthens the role of the board as the watchdog for fundholders. Specifically, a more independent and thus stronger board is more able to prevent fund managers' domination over the board [27] and to vigorously represent fundholders' interests when evaluating fund managers' action and plan. Further, stronger boards provide better protection to fundholders from dysfunctional behavior (Fama and Jensen, 1983) such as style drift. Therefore, we predict that funds with better board quality can do a better job in monitoring and ensuring style consistency.

H1b: Funds with better board quality exhibit less style drift.

The third governance mechanism is the financial compensation structure received by managers of a mutual fund. Fund manager compensation consists typically of a mixture of salary (fixed compensation) and incentives (variable compensation); deferred

[27] Interested directors have greater access to information about the fund that give them advantage over the independent directors in setting the board agenda as well as dominating the board meeting.

and non-deferred compensation; and cash and non-cash compensation. Further, managerial incentives may be based on assets under management and/or performance based bonus (pre- or after-tax performance bonus).[28]

Managerial compensation structure, particularly incentives, has implications for the alignment of interests between fund managers and fundholders. For example, Massa and Patgiri (2009) show that fund managers whose payoffs are closely related to their performance (high incentives) deliver superior performance, suggesting that incentives affect unobserved actions of fund managers. Their findings show that the superior performance is not only explained by fund managers' efforts but also their higher risk-taking. In analyzing the relationship between managerial incentives and fund survivability using Cox's hazard rate, they find an increase in incentives also leads to an increase in the hazard rate. Thus, funds with higher incentives (i.e., a higher proportion of performance-related compensation in the managers' total payoffs) have a lower probability of survival.

The above study suggests that the managerial compensation structure may have a detrimental effect on fund stewardship as it induces fund managers to embark on risk-shifting which ultimately leads to lower survivability. This adverse effect is more likely to occur if the financial incentives are measured based on performance over a short-term

[28] In a study of 4,138 U.S. mutual funds from 669 fund management companies in 2009, Ma, Tang, and Gomez (2013) find that 98 percent of fund managers receive variable compensation, about three-quarters of managers receive bonus based on fund performance, and about 30 percent of managers have deferred compensation.

period.[29] It is because short-term performance incentives induce fund managers to frequently shift their portfolio risk (away from fundholders' preferences), stretching for a risky short-term gain. For example, when the incentives are based on the fund's year-end return rank relative to its peers, fund managers tend to change their fund risk profile during the year depending on the fund's interim rank (Brown, Harlow and Starks, 1996; Chevalier and Ellison, 1997). This risk-shifting behavior exhibited by fund managers ultimately results in higher style volatility (Brown, Harlow and Zhang, 2012). Therefore, we hypothesize:

H1c: Funds whose managerial incentives are based on long-term fund performance exhibit less drift.

The last governance mechanism studied is managerial ownership, which concerns the amount of capital invested by managers in the fund they manage. Information on managerial ownership is valuable to fundholders, and as such the SEC requires funds to disclose this info regularly in their Statement of Additional Information (SAI).[30]

By owning a share of the fund, a fund manager aligns her interests with those of fundholders as both parties now share the same ownership experience. As a result, fund

[29] Ma, Tang, and Gomez (2013) observe a significant variation in the performance evaluating periods. The longest is 10-year and the shortest is one-quarter.
[30] Khorana, Servaes, and Wedge (2007) report almost half of fund managers have ownership in their funds. Evans (2008) reports that 51.5% equity fund managers have ownership over $500,000.

managers with a significant ownership in the fund are more likely to act in the best interest of fundholders, which is the essence of fund stewardship.[31]

The literature shows that managerial ownership is a sound governance practice for aligning incentives between fund manager and fundholders. Evans (2008) finds managerial ownership is inversely related to fund turnover, suggesting a reduction in the agency cost of the type in Dow and Gorton (1997).[32] She also reports that the percentage managerial ownership is positively related to style-adjusted performance. Additionally, managerial ownership can explain future fund performance, and contains desirable incentive alignment attributes for investors (Khorana, Servaes and Wedge, 2007).

The percentage of managerial ownership shows the fund managers' conviction in the fund investment strategies as well as in their ability to execute those strategies. This conviction is essential for fund strategy execution and investment style consistency monitoring. Therefore, we expect funds with higher managerial ownership exhibit less drift.

H1d: Funds with higher managerial ownership exhibit less style drift.

In addition to the above governance mechanisms, we also evaluate fund attributes which indicate the quality of fund stewardship in recent years, i.e., regulatory history and

[31] Manager ownership is part of insider ownership standard in the Bogle(2009)'s Stewardship Quotient.
[32] Dow and Gorton (1997) argue that excessive trading results from an attempt by an uninformed/unskilled fund manager (agent) to appear to fundholders (principal) that they are informed/skilled and are not simply doing nothing, since fundholders cannot distinguish uninformed trading from the informed one.

fees. These measures are relevant to evaluate current stewardship as they demonstrate the actual outcome of fund stewardship.

Regulatory history attests any regulatory issues that involve the mutual fund over the last seven years. Since regulatory issues are essentially breaches of fiduciary duties, mutual funds that have experienced regulatory issues of any kind are perceived as having an inadequate implementation of compliance control. For this reason, regulatory history not only reflects the fund's ability to comply with regulation, but also reveals the quality of compliance control mechanism implemented by the fund (Davis, Payne and McMahan, 2007).

Compliance to stated investment style is governed by Securities Act (1933) and Investment Company Names (2001). Mutual funds that do not have any regulatory problems are more likely to have an adequate control and monitoring mechanism in place to ensure that the fund's actual investment complies with the regulatory requirements and meets its stated objectives. Therefore, we expect funds with better regulatory history have a more consistent investment style. We hypothesize the following:

H2: Funds with better regulatory history exhibit less style drift.

The second attribute is fund fees. Fees capture the effectiveness of governance in reducing agency problems in a fund. Unlike the first four governance mechanisms (tested in H1a to H1d), which measure the current quality of stewardship (the leading measure),

fees are the outcome of fund stewardship which measures the actual results of stewardship (the lagging measure). Fees are a good attribute to assess fund stewardship since they showcase the conflict between fund managers' desire for higher income and fundholders' concern for lower expenses. If a fund charges high fees, fund managers' income is maximized, while fundholders' total returns are adversely affected. Thus, fees charged by fund managers to fundholders are the prevailing outcome of the conflicts between them and indicate the effectiveness of governance mechanisms adopted by a fund in reducing those conflicts. Therefore, fees are an important measure used to assess fund stewardship.[33]

The relationship between fund fees and style drift can be explained by the adapted Dow and Gorton (1997) model.[34] Fund managers who actively search for short-term trading opportunities[35] and find those only in a style other than the mandated investment style will still execute trades to signal to their fundholders that they posses skill or private information, although such trades may actually increase the portfolio's style risk.[36] This action results from an inability of fundholders to distinguish an informed trade from an uninformed one. A consequence of frequent short-term trading is increased turnover, which in turn leads to higher fees. Therefore, we hypothesize:

---

[33] To evaluate funds with good stewardship, Bogle(2009)'s Stewardship Quotient has three standards (out of twelve) related to fees (i.e., advertising, pays for shelf-space, and sales commissions).
[34] In original Dow and Gorton (1997) model there is no limitation on investment style.
[35] It refers to trading opportunities induced by incentives based on short-term performance.
[36] Style risk is measured using tracking error (in information ratio) or residual standard deviation (in appraisal ratio).

H3: Funds with lower total fees exhibit less style drift.

3.3 Summary

In summary, we develop three main hypotheses on the relationship between style drift and fund stewardship. The first hypothesis is related to fund stewardship, while the second and the third are related to the actual outcome of fund stewardship. In the next chapter, the methods to test the hypotheses are discussed.

CHAPTER 4

DATA AND RESEARCH METHOD

4.1 Introduction

This chapter discusses the sample and research methods used to test the hypotheses developed in Chapter 3. It begins with a discussion of our data sources in Section 4.2, followed by Section 4.3 which describes the cross-sectional regression model used in our tests. A summary of this chapter is provided in Section 4.4.

4.2 Data

We construct our sample by identifying open-ended U.S. equity funds that have both return/holdings and MS Grade data in the Morningstar Direct database. As at October 2011, there are 464 such funds covering 2,616 fund classes, representing about 18% of all mutual fund classes domiciled in the U.S. that invest solely in the U.S. equity market. They include 249 large cap funds, 84 mid-cap funds, and 77 small cap funds. Among these funds, 102 are value funds, 136 core funds, and 172 growth funds. There are also 54 specialty funds in our sample. The total net asset value (fund size) of our sample funds is approximately US$2.1 trillion or about 63% of the total net asset value of all domestic equity funds in the U.S.

For each fund, we collect data on the following fund characteristics: name, size, and age; manager names and tenure; objectives as stated in the prospectus; family size; number of share classes; net expense ratio; return rank; turnover ratio; managerial ownership level; overall stewardship grade; board quality grade; corporate culture grade; fees grade; managerial compensation grade; and regulatory history grade. We augment data on fund objectives retrieved from the database with styles identified manually from the fund's name, especially for funds whose objective is not associated with size or value orientation (e.g., asset allocation or balanced funds). Morningstar Direct provides mutual fund data at the fund class level. Since funds typically offer multiple classes which differ slightly in the fee components, we carry out our analysis at the fund level instead of fund class level.[37] The class selected to represent a fund is the one with the largest net asset value.

4.3 Research Method

We run the following cross-sectional OLS regression model to test the relationship between fund stewardship quality and style drift:

[37] Various fund classes offered by the same investment company typically have the same investment objectives, portfolio holdings, stewardship grades and gain similar returns.

$$Style_i = \alpha + \beta_1 Governance_i + \beta_2 Ret\ Rank_i + \beta_3 Ln(Age)_i + \beta_4 Ln(Size)_i + \beta_5 No.Classes_i + \beta_6 Turnover_i + \beta_7 Single\ Mgr_i + \beta_8 Mgt\ \ Change_i + \beta_9 Size\ Objective_i + \beta_{10} Value\ Growth\ Objective_i + \varepsilon_i \quad (1)$$

where for fund *i*, *Style* is either the style drift or style dispersion measure for the fund, and *Governance* is our measure of fund stewardship. We include in the regression other fund characteristics that are expected to influence the level of style consistency. We discuss the measurement of these test variables next.

4.3.1 Measurement of Style Drift

Measurement of style drift requires information on fund asset allocation over time. The process of estimating asset allocation made by fund managers is known as style analysis. The output of this analysis is the fund's actual investment style (as opposed to prospectus/stated style) which comprises weights of assets allocated in a set of styles for a particular period. By performing style analysis periodically, we can observe whether there is a drift in the fund's investment style over the observation period.

There are two approaches to performing style analysis, both of which are used in this thesis.[38] The first approach, the holdings-based style analysis (HBSA), uses the fund's actual stock holdings data. HBSA evaluates the fund's exposure to a number of styles based on the characteristics of its underlying stocks. Morningstar Direct provides

[38] See Appendix A.

historical percentages of a portfolio's equity holdings by market-cap size, value-growth orientation, and a combination of both. We obtain quarterly percentages (weights) of a portfolio's equity holdings from October 2007 to September 2011.

The second approach, the returns-based style analysis (RBSA), was first introduced by Sharpe (1988) who views asset allocation as playing a significant part in the variability of investors' portfolio returns. Accordingly, the effectiveness of an investor's overall asset allocation can be compared with a mix of asset class benchmarks. Sharpe (1992) explains that style analysis can be implemented using quadratic programming for determining the fund's exposure to changes in the returns on major asset classes. Further, he asserts that desirable asset classes for RBSA should be mutually exclusive, exhaustive, and have differing returns. Sharpe (1992) concludes that style analysis can help investors achieve their investment goals in a cost-effective way. The benefit of RBSA is also supported by Gallo and Lockwood (1997) who describe the model as simple, discriminatory, and cost effective.

RBSA is however criticized for failing to detect style drift in a timely manner because it is commonly carried out using rolling monthly returns (Christopherson and Sabin, 1999; Lucas and Riepe, 1996). Hardy (2003) offers a practical solution to this problem by suggesting the use of daily returns instead of rolling monthly returns. He

claims that daily data improve the quality and timeliness of RBSA so that it is sensitive enough to identify style drift.

This thesis adopts the RBSA approach of Hardy (2003) using non-overlapping daily return data to improve the model's sensitivity in detecting style drift. The RBSA model is expressed as follows:

$$R_{idm} = w_{i1m}F_{1dm} + w_{i2m}F_{2dm} + \ \ldots\ + w_{inm}F_{ndm} + e_{idm}, \qquad (2)$$

where for fund i on date d of month m ($m = 1, 2,\ldots, k$), R_{idm} is the return on the fund; F_{xdm} is the return on a style x benchmark index ($x = 1, 2,\ldots, n$); w_{ixm} is the weight of style x ($x = 1, 2,\ldots, n$); and e_{idm} is the error term. We estimate fund style weights using daily returns data for a 48-month period extending from October 2007 to September 2011, and fund monthly style weights (w_{ixm}) are estimated using quadratic programming. Following Sharpe (1988, 1992), we constrain w_{ixm} to be non-negative and sum to 1 to represent a long-only portfolio.

We use selected style indexes from Morningstar index family, including: (i) nine Morningstar Style Indexes; (ii) three Morningstar Composite Style Indexes; and (iii) three Morningstar Cap Indexes.[39] The Morningstar index family is chosen because it has more indexes and this allows for more detailed style analysis. Specifically, the Morningstar

[39] The nine Morningstar Style Indexes include Morningstar Large Value, Morningstar Large Core, Morningstar Large Growth, Morningstar Mid Value, Morningstar Mid Core, Morningstar Mid Growth, Morningstar Small Value, Morningstar Small Core, and Morningstar Small Growth. The three Morningstar Composite Style Indexes include Morningstar US Value, Morningstar US Core, and Morningstar US Growth. The three Morningstar Cap Indexes include Morningstar Large Cap, Morningstar Mid Cap, and Morningstar Small Cap

index family consists of 15 indexes associated with 15 different investment styles covering 97% of U.S. equity market.[40] In comparison, other popular indexes such as Russell indexes accommodate approximately the same coverage[41] with 11 indexes. Morningstar indexes also have the added benefit of being constructed using a non-overlapping approach; this satisfies the mutually exclusive requirement for RBSA which we use in our analysis.

In order to identify fund style drift, researchers need to examine numerous asset allocation graphs produced by RBSA and then map the identified style into a style map. Idzorek and Bertsch (2004) propose a so-called Style Drift Score (SDS), which quantitatively measures style drift of a fund's portfolio in a single statistic. Low SDS represents a low degree of style drift, and a high SDS shows the reverse. They claim that SDS is ideal for portfolio screening, comparing style consistency, and monitoring fund style drift.

To calculate SDS, we use fund monthly style weights (w_{ixm}) from October 2007 to September 2011 obtained from both HBSA and RBSA. As per Idzorek and Bertsch (2004), SDS is calculated as the square root of the sum of the variances of the style weights obtained from equation (2) above:

---

[40] Morningstar applies liquidity screens to exclude the least liquid (micro-cap) stocks – these account for approximately 3% of all U.S. domiciled stocks.

[41] Russell 3000E Index represents approximately 99% of the U.S. equity market including 2000 micro-cap stocks which are excluded by Morningstar index family.

$$Idzorek\ and\ Bertsch\ SDS_i = \sqrt{Var\begin{pmatrix} w_{i11} \\ w_{i12} \\ \vdots \\ w_{i1k} \end{pmatrix} + Var\begin{pmatrix} w_{i21} \\ w_{i22} \\ \vdots \\ w_{i2k} \end{pmatrix} + \cdots + Var\begin{pmatrix} w_{in1} \\ w_{in2} \\ \vdots \\ w_{ink} \end{pmatrix}}, \quad (3)$$

where SDS_i is the style drift score of fund i; and w_{ixm} is the weight of style x within fund i in month m obtained from the style analysis process. We produce an SDS measure for each investment style for each fund: (i) size SDS; (ii) value SDS; and (iii) overall SDS.

In addition to Idzorek and Bertsch SDS, we also measure fund style drift using Morningstar SDS. Instead of measuring the total variance of style weights across time as in Idzorek and Bertsch, Morningstar measures the total inter-period differences in style exposure for the analysis period using the following formula:

$$Morningstar\ SDS_i = \sum_{\mathrm{m}=1}^{\mathrm{k}-1} \sqrt{\sum_{x=1}^{n} \left(w_{\mathrm{ix(m+1)}} - w_{\mathrm{ixm}}\right)^2} \quad (4)$$

where Morningstar SDS_i is the style drift score of fund i.

From Morningstar, we extract another dimension of style drift, which is style dispersion. The style dispersion metric measures the degree of the overall scatter of the holdings in the most recent portfolio along with both the value-growth and size dimensions. Investments with a low score are considered more consistent and those with a high score are less.

In sum, two measures of style drift are used in our tests and they are style consistency and style dispersion. Both returns-based and holding-based data are used to compute style consistency, which in turn are measured using the methods in Morningstar and Idzorek and Bertsch (2004).

Table 4.1 presents the mean value of SDS for each style category. As shown in Panel A, the values of size SDS are generally much smaller than those of value SDS. This indicates that equity funds tend to drift more in the value dimension than the size dimension. Mid-cap funds exhibit a high level of style drift in both dimensions and as a consequence, have the highest overall SDS. For specialty funds, the level of style drift in both value and size dimensions is the highest since their investment styles are not constrained by these dimensions.

Most style categories in Panel B also exhibit a greater tendency to drift in the value dimension than in the size dimension. Small value funds exhibit a considerably high level of value style drift but at the same time also have the lowest level of size drift. This suggests that it is common for funds in small value category to incline their style toward growth category without shifting much in its size style.

4.3.2 Measurement of Fund Governance

We use Morningstar Stewardship (MS) Grade data to measure the quality of fund stewardship. There are five governance mechanisms (components) contributing to fund

stewardship quality in MS Grade. For each component, Morningstar assigns a score based on its assessment of quantitative and qualitative factors. The MS Grade components with their corresponding factors (subcomponents) and scorings are summarized in Appendix B and briefly explained below:

1) *Board Quality* considers three factors: (i) independence of directors and chairman; (ii) independent directors' ownership; and (iii) the board's service to shareholders. The first two factors are worth 0.5 point each, and the third factor is worth 1 point. Thus, the maximum score for this component (*BQ-score*) is 2.

2) *Corporate Culture* considers four factors:

   i. Focus of the company: whether the fund company is focused on investing or on gathering assets;

   ii. Investment process: whether the fund company cultivates a repeatable and risk-aware investment process;

   iii. Responsible marketing: whether the fund company's marketing strategy aims to grow the fund quickly through flashy advertisements publicizing short-term returns; and

   iv. Manager retention: whether the fund retains talented managers at the firm.

   Each factor is worth 1 point. Therefore, the maximum score for this component (*CC-score*) is 4.

3) *Manager Incentives* assesses two distinct factors:

   i. *Manager Compensation* (*MC-score*); and

   ii. *Manager Ownership* (*MO-score*).

   Each factor is worth 1 point so the maximum score for this component (*MI-score*) is 2.

4) *Fees* assesses the fund's expense ratio relative to its peer group in the same market-cap range and fund class. *Fees* score (*F-score*) ranges from 0 to 2.

5) *Regulatory History* assesses any regulatory issues at the fund company. Funds with no regulatory concerns receive a score (*RH-score*) of 0, while funds with serious issues can have its *RH-score* reduced to -2.

Morningstar assigns grades from A (best) to F (worst) for each stewardship component based on its score. Grades A, B, C, D, and F correspond to full credit, ¾ credit, ½ credit, ¼ credit, and no credit respectively. The Overall Stewardship Grade (*OS-grade*) for a fund is based on the sum of the above five component scores. *OS-grade* A, B, C, D, and F correspond to total stewardship score (*OS-score*) of 9-10 points, 7-8.5 points, 5-6.5 points, 3-4.5 points, and 2.5 points or less, respectively. In this way, the maximum score of stewardship components serves as a component weight in the MS Grade methodology (Lutton, Rushkewicz, Liu and Ling, 2011).

Table 4.1
Style consistency measures categorized by fund style

Fund style consistency is measured using the style drift score (SDS), style consistency metric, and style dispersion metric. SDS is measured using the method in Idzorek and Bertsch (2004) and Morningstar. The basis for SDS computation is style analysis, i.e RBSA (return-based style analysis) and HBSA (holdings-based style analysis). Style consistency metric measures the extent of historical style movement in the style box based on HBSA. Style dispersion metric is the average degree of scatter of the holdings during the observation period. In any measure, funds with lower scores are more consistent than those with higher scores. Style consistency is measured either in size dimension (*Size*), value-growth dimension (*Value*), or combination of both (*Overall*). Size and Value-Growth are the main bases for classification of equity fund investment styles. Large, Mid, and Small are fund styles based on size. Value, Core, and Growth are fund styles based on value orientation. Large Value, Large Core, Large Growth, Mid Value, Mid Core, Mid Growth, Small Value, Small Core, and Small Growth are fund styles based on combinations of size and value orientation. Specialty is another style category that invests primarily in the equity of a particular industry or sector. Statistics for samples classified by either Size or Value-Growth are in Panel A, while the statistics for samples classified by combinations of both Size and Value-Growth are in Panel B. Median values are reported in parentheses.

	RBSA Idzorek & Bertsch SDS			RBSA Morningstar SDS			HBSA Idzorek & Bertsch SDS			Style Consistency Metric			Style Dispersion Metric		
	Overall	*Size*	*Value*	*Overall*	*Size*	*Value*	*Overall*	*Size*	*Value*	*Overall*	*Size*	*Value*	*Overall*	*Size*	*Value*
Panel A. Mean values of style consistency measures by Size, Value-Growth and Specialty															
Size															
Large	0.337	0.240	0.283	17.91	10.89	13.43	9.17	5.89	8.67	14.69	10.27	21.77	154.23	83.23	128.96
	(0.331)	(0.237)	(0.276)	(17.53)	(10.52)	(13.30)	(8.75)	(4.99)	(8.25)	(12.50)	(8.25)	(19.87)	(153.27)	(82.58)	(129.00)
Mid	0.420	0.323	0.347	22.51	15.22	16.50	10.94	9.06	9.82	18.17	9.15	22.02	136.58	61.61	120.76
	(0.417)	(0.315)	(0.341)	(22.12)	(14.85)	(16.62)	(9.80)	(8.04)	(9.24)	(15.36)	(7.54)	(17.89)	(133.70)	(55.73)	(121.10)
Small	0.401	0.271	0.342	21.44	11.84	16.96	10.38	8.41	8.93	20.17	9.40	20.05	129.56	51.79	118.29
	(0.405)	(0.277)	(0.351)	(21.61)	(12.20)	(17.47)	(9.88)	(7.59)	(8.25)	(17.21)	(7.52)	(17.71)	(129.59)	(51.07)	(118.55)
Value-Growth															
Value	0.356	0.237	0.310	19.21	10.63	15.35	9.44	6.46	8.68	12.00	8.96	18.43	141.85	73.09	120.18
	(0.356)	(0.231)	(0.318)	(18.60)	(10.38)	(14.52)	(8.90)	(5.76)	(8.25)	(10.07)	(7.54)	(16.71)	(142.05)	(76.31)	(121.36)
Core	0.352	0.242	0.306	19.19	11.04	15.31	9.25	6.56	8.55	16.08	10.05	22.30	156.37	75.80	135.65
	(0.360)	(0.233)	(0.316)	(19.91)	(10.52)	(15.57)	(8.59)	(5.38)	(8.33)	(14.39)	(7.97)	(21.43)	(156.79)	(76.62)	(136.35)
Growth	0.384	0.296	0.308	20.05	13.55	13.94	10.36	7.71	9.44	19.36	10.28	22.69	140.24	70.40	120.18
	(0.387)	(0.283)	(0.294)	(19.99)	(13.58)	(13.76)	(9.76)	(6.84)	(8.52)	(17.32)	(8.54)	(20.73)	(139.12)	(71.28)	(118.61)
Specialty	0.548	0.416	0.443	24.77	17.77	17.03	15.80	10.60	15.84	25.06	14.79	36.15	147.05	87.91	116.09
	(0.564)	(0.480)	(0.457)	(26.24)	(20.19)	(17.93)	(15.65)	(10.14)	(15.97)	(23.59)	(14.12)	(37.59)	(152.51)	(89.47)	(111.86)

Table 4.1 (continued)

	RBSA Idzorek & Bertsch SDS			RBSA Morningstar SDS			HBSA Idzorek & Bertsch SDS			Style Consistency Metric			Style Dispersion Metric		
	Overall	*Size*	*Value*	*Overall*	*Size*	*Value*	*Overall*	*Size*	*Value*	*Overall*	*Size*	*Value*	*Overall*	*Size*	*Value*
Panel B. Mean values of style consistency measures by the combinations of Size and Value-Growth style															
Large Value	0.329	0.218	0.284	17.25	9.43	13.60	8.98	5.39	8.58	10.84	9.66	19.04	147.87	84.07	120.77
	(0.317)	(0.211)	(0.269)	(17.04)	(9.42)	(13.30)	(8.75)	(4.64)	(8.25)	(9.30)	(8.06)	(16.81)	(148.19)	(84.65)	(122.58)
Large Core	0.315	0.217	0.272	17.13	9.96	13.53	8.66	5.48	8.27	14.52	10.24	22.65	163.34	84.16	139.19
	(0.325)	(0.192)	(0.275)	(16.55)	(9.58)	(13.73)	(8.12)	(4.57)	(7.75)	(12.81)	(8.15)	(22.02)	(164.20)	(82.65)	(141.81)
Large Growth	0.363	0.278	0.292	19.14	12.85	13.21	9.80	6.64	9.12	17.59	10.72	22.89	150.12	81.76	125.11
	(0.362)	(0.270)	(0.286)	(18.61)	(12.22)	(12.96)	(9.22)	(5.73)	(8.46)	(16.33)	(9.09)	(20.92)	(149.90)	(79.94)	(125.04)
Mid Value	0.411	0.309	0.348	22.92	14.90	17.78	11.40	9.65	9.65	13.76	8.02	18.85	132.70	55.41	119.82
	(0.394)	(0.295)	(0.350)	(22.39)	(14.37)	(17.98)	(10.99)	(9.33)	(8.84)	(10.89)	(6.55)	(15.04)	(131.18)	(50.64)	(120.12)
Mid Core	0.430	0.312	0.371	23.27	14.60	18.14	11.16	9.41	10.08	19.19	10.20	25.04	149.39	66.42	132.28
	(0.443)	(0.306)	(0.378)	(23.47)	(16.32)	(18.99)	(10.81)	(7.63)	(10.51)	(16.58)	(7.39)	(22.17)	(146.57)	(62.19)	(130.66)
Mid Growth	0.420	0.337	0.334	21.88	15.72	14.92	10.58	8.58	9.76	19.89	9.17	22.03	131.69	62.20	115.07
	(0.416)	(0.338)	(0.325)	(21.99)	(15.92)	(14.38)	(9.73)	(7.47)	(8.98)	(17.85)	(8.03)	(17.63)	(129.58)	(56.10)	(113.33)
Small Value	0.396	0.216	0.362	22.23	9.67	19.33	8.72	6.68	7.76	14.66	7.15	15.17	128.18	49.52	118.10
	(0.406)	(0.195)	(0.371)	(22.51)	(9.89)	(19.61)	(8.44)	(6.32)	(7.07)	(10.82)	(6.47)	(11.49)	(129.04)	(49.72)	(118.55)
Small Core	0.415	0.269	0.368	22.81	11.68	19.07	9.65	7.90	8.15	18.95	9.22	18.54	137.19	53.76	125.75
	(0.437)	(0.259)	(0.381)	(23.77)	(10.94)	(19.30)	(9.04)	(5.82)	(7.90)	(15.70)	(7.30)	(17.60)	(138.39)	(53.71)	(127.15)
Small Growth	0.394	0.295	0.316	20.24	12.85	14.63	11.50	9.41	9.89	23.12	10.41	22.93	125.28	51.44	113.65
	(0.393)	(0.290)	(0.314)	(20.24)	(13.22)	(14.95)	(11.16)	(8.85)	(8.54)	(19.71)	(8.82)	(19.95)	(123.69)	(50.19)	(112.85)

A major drawback of MS Grade methodology is the use of ordinal scale (from A to F) to measure stewardship although the grade was determined based on numeric scores measured in a ratio scale (credit/points awarded by Morningstar analysts). The ratio scale carries a higher level of measurement data than ordinal scale as it involves a true zero point. In the MS Grade methodology, the true zero point occurs when a fund is not awarded any credit since it does not satisfy a particular evaluation criterion. The ordinal grades can be misleading as they conceal the higher level of measurement data contained in numeric scores. Past studies (Casavecchia and Tooman, 2011; Huang and Chen, 2011) do not convert the grades back into stewardship scores; instead, they convert the ordinal letter variable into another ordinal variable, for example A to 5, B to 4, and so on. Thus, the scale degradation occurs in the conversion process as the newly constructed variables do not have a true zero point.

In this study, we use the numeric scores of Morningstar fund stewardship data instead of the ordinal stewardship grades. By doing so, we can carry out a more precise stewardship analysis benefiting from the higher level of measurement data. Additionally, the numeric scores also enable us to decompose fund stewardship components into subcomponents with their respective

contributing scores. In this way, we can analyze in more detail the separate roles played by stewardship, both at the component and subcomponent levels.

In addition to the overall fund level analysis, we also carry out analysis at the stewardship component level. For this purpose, we include all five components of stewardship provided in MS Grade with some modifications. Here we also use stewardship component scores instead of grades. Accordingly, we use *CC-score*, *BQ-score*, *MI-score*, *MO-score*, *MC-score*, *F-score*, and *RH-score* as respective measures of stewardship component quality for *Corporate Culture, Board Quality, Manager Incentives, Manager Ownership, Manager Compensation, Fees,* and *Regulatory History.*

Fund stewardship component scores can be easily obtained by converting MS component grades based on the MS Grade methodology (Morningstar, 2011). Fund subcomponent scores (*MC-score* and *MO-score*), on the other hand, are obtained rather laboriously through Morningstar analysis of stewardship grading for each individual fund. By doing so, we can get information on the credit awarded by Morningstar analysts to *Manager Compensation* and *Manager Ownership* subcomponents. We refer to MS Grade methodology to convert the credit awarded by Morningstar into the corresponding score.

For components/subcomponents of fund stewardship that are quantitative in nature, e.g., *Fees* and *Manager Ownership*, we obtain the numeric data reported in Morningstar Direct to provide an alternative measure to the stewardship component scores. The underlying measure of *Fees* grade in the MS Grade methodology is the net expense ratio, so we obtain actual fund net expense ratios as an alternative measure of *F-scores*. Similarly, we collect managerial ownership data from Morningstar Direct as it is the underlying measure of *MO-scores*. In the database, managerial ownership is presented in 7 ranges of dollar values,[42] mirroring the SEC disclosure requirement. For our analysis, we use the mid range value of individual manager ownership and sum them to get the total managerial ownership for the fund.

Table 4.2 provides the descriptive statistics of the sample funds. The *Overall Stewardship* score averages 6.6 and ranges from 1.5 to 10. Although *Overall Stewardship* does not appear to differ across the different size style categories, it is marginally higher for the value than for the growth style category. Looking at the individual components of stewardship, *Board Quality* score averages 1.4 (out of a possible maximum of score of 2); the average *Corporate Culture* score is 2.8 (out of a maximum score of 4); *Fees* scores averages 1.3 (out of a maximum score of 2);

[42] The manager ownership ranges are zero; $1 to $10,000; $10,001 to $50,000; $50,001 to $100,000; $100,001 to $500,000; $500,001 to $1 million; and more than $1 million.

and the average *Manager Incentives* score is 1.1 (out of a maximum score of 2). The two subcomponents of *Manager Incentives*, *Manager Compensation* and *Manager Ownership*, each has an average score of 0.7 and 0.4, respectively. The *Regulatory History* score is -0.01, implying some regulatory issues of concern at the average fund company in recent years.

The average fund has a net expense ratio of 0.98%, is about 21 years (249.2 months) old, and has total net asset value worth $5 billion, 5.8 fund classes, and a turnover ratio of 67.4%. About 38% funds are managed by a single manager, with 28% experiencing a management turnover over our sample period. While one-third of the funds specify size as the style objective, three-quarters have value-growth as the style objective.

4.3.3 Measurement of Control Variables

We control for the fund's relative performance in our tests since it can affect the fund managers' risk taking behavior (Chan, Chen and Lakonishok, 2002; Lai, Tiwari and Zhang, 2010) which may cause a style drift. This behavior is known as the tournament effect (Brown, Harlow and Starks, 1996) where funds with below median mid-year performance increase their risk in the next half of the year with the intention of catching up with the better performing

funds. We measure the fund's relative performance (*Ret Rank*) using its average mid-year return rank (for a 4-year observation period) relative to its peers.

We control for the fund's *Age* and *Size* as they may shape the fund's ability to control style drift. Larger funds, for example, have more limited investment opportunity, which may lead to drift. *Age* is the number of years from the date of inception of the fund, and *Size* is the total net asset value managed by the fund. The number of classes offered (*No. Classes*) indicates the fund manager's span of control which may affect her ability to monitor the investment style. The turnover ratio (*Turnover*) is the minimum of sales or purchases divided by the average monthly net assets, and it controls for the effect of management activity on the level of style drift. As risk taking behavior of team-managed funds is significantly different from single manager funds (Bär, Kempf and Ruenzi, 2005), we include *Single Mgr,* which takes the value of one if the fund is managed by one manager, and zero otherwise. A change in management may also affect the fund investment style (Gallo and Lockwood, 1999; Khorana, 2001), so we include *Mgt Change,* which takes the value of zero if there is least one manager running the fund continuously over the sample period, and one otherwise. [43]

[43] Data on manager tenure obtained from Morningstar Direct are used to determine the value of this variable. For funds with more than one manager, we select the manager with the longest tenure.

Table 4.2
Descriptive statistics of samples categorized by fund style

Size and Value-Growth are the main bases for classification of equity fund investment styles. Large, Mid, and Small are fund styles based on size. Value, Core, and Growth are fund styles based on value orientation. Large Value, Large Core, Large Growth, Mid Value, Mid Core, Mid Growth, Small Value, Small Core, and Small Growth are fund styles based on combinations of size and value orientation. Specialty is another style category that invests primarily in the equity of a particular industry or sector. *Overall Stewardship, Board Quality, Corporate Culture, Manager Incentives, Manager Compensation, Manager Ownership, Regulatory History,* and *Fees* are numeric scores of Morningstar stewardship grades. *Net expense ratio* is the percentage of fund assets paid for operating expenses and management fees. *Return rank* is the average of mid-year return rank percentile (for a 4-year observation period) of a particular fund relative to its peers. *Age* is the number of months since the date of inception of the fund, and *Size* is the fund's total asset under management. *No of classes* is the number of share classes offered by the fund. *Turnover ratio* is the minimum of sales or purchases divided by average monthly net assets. *Single manager* indicates if fund is managed by one manager. *Management change* indicates whether there was a total change in managers during the observation period (October 2007-September 2011). *Size objective* and *Value-Growth objective* indicate if fund has a specific style objective in terms of size and value-growth respectively. Median values are reported in parentheses.

	No of observations	*Overall Stewardship Score*	*Board Quality score*	*Corporate Culture score*	*Manager Incentives score*	*Manager Compensation score*	*Manager Ownership score*	*Regulatory History score*	*Fees score*	*Net expense ratio (%)*	*Return rank (%)*	*Age (months)*	*Size (USD bil)*	*No of classes*	*Turnover ratio (%)*	*Single manager (dummy)*	*Management change (dummy)*	*Size objective (dummy)*	*Value-Growth objective (dummy)*
Panel A. Mean statistics of samples by Size, Value-Growth and Specialty																			
Size																			
Large	249	6.6	1.4	2.7	1.1	0.7	0.4	0.0	1.3	0.89	47.1	279.1	7.22	6.2	64.6	0.37	0.31	0.16	0.90
		(6.5)	(1.5)	(3.0)	(1.0)	(0.5)	(0.5)	(0.0)	(1.5)	(0.91)	(46.0)	(217.0)	(2.17)	(6.0)	(47.7)	(0.00)	(0.00)	(0.00)	(1.00)
Mid	84	6.6	1.4	2.8	1.1	0.7	0.5	0.0	1.3	1.05	49.2	224.7	3.48	5.6	68.9	0.37	0.27	0.54	0.94
		(6.5)	(1.5)	(3.0)	(1.0)	(0.7)	(0.5)	(0.0)	(1.5)	(1.04)	(47.6)	(188.5)	(1.60)	(6.0)	(54.0)	(0.00)	(0.00)	(1.00)	(1.00)
Small	77	6.6	1.4	2.9	1.0	0.7	0.3	0.0	1.3	1.15	45.4	189.7	2.07	5.5	65.3	0.27	0.17	0.86	0.66
		(6.5)	(1.5)	(3.0)	(1.0)	(1.0)	(0.0)	(0.0)	(1.5)	(1.19)	(44.3)	(170.0)	(1.17)	(6.0)	(52.0)	(0.00)	(0.00)	(1.00)	(1.00)
Value-Growth																			
Value	102	6.8	1.5	2.7	1.1	0.7	0.4	0.0	1.5	0.93	48.4	242.4	4.65	6.7	50.7	0.24	0.25	0.40	0.80
		(6.5)	(1.5)	(3.0)	(1.0)	(1.0)	(0.5)	(0.0)	(1.5)	(0.94)	(47.3)	(187.5)	(1.73)	(7.0)	(37.9)	(0.00)	(0.00)	(0.00)	(1.00)
Core	136	6.7	1.3	3.0	1.1	0.7	0.4	0.0	1.3	0.90	46.0	249.8	7.10	5.2	57.2	0.38	0.22	0.35	0.83
		(6.5)	(1.5)	(3.0)	(1.0)	(0.5)	(0.0)	(0.0)	(1.5)	(0.95)	(44.4)	(181.5)	(1.89)	(5.0)	(37.4)	(0.00)	(0.00)	(0.00)	(1.00)
Growth	172	6.4	1.4	2.7	1.1	0.7	0.5	0.0	1.2	1.04	47.3	257.5	4.68	6.1	81.2	0.40	0.33	0.37	0.92
		(6.3)	(1.5)	(3.0)	(1.0)	(0.5)	(0.5)	(0.0)	(1.5)	(1.02)	(46.6)	(208.0)	(1.58)	(6.0)	(68.0)	(0.00)	(0.00)	(0.00)	(1.00)
Specialty	54	6.6	1.4	2.6	1.0	0.7	0.4	-0.1	1.7	1.03	44.5	234.0	2.23	4.5	79.7	0.57	0.33	0.00	0.02
		(6.5)	(1.5)	(2.0)	(1.0)	(0.8)	(0.0)	(0.0)	(2.0)	(0.96)	(42.3)	(213.0)	(1.08)	(5.0)	(56.4)	(1.00)	(0.00)	(0.00)	(0.00)

Table 4.2 (continued)

	No of observations	*Overall Stewardship Score*	*Board Quality score*	*Corporate Culture score*	*Manager Incentives score*	*Manager Compensation score*	*Manager Ownership score*	*Regulatory History score*	*Fees score*	*Net expense ratio (%)*	*Return rank (%)*	*Age (months)*	*Size (USD bil)*	*No of classes*	*Turnover ratio (%)*	*Single manager (dummy)*	*Management change (dummy)*	*Size objective (dummy)*	*Value-Growth objective (dummy)*
Panel B. Mean statistics of samples by combinations of Size and Value-Growth																			
Large Value	66	6.7	1.5	2.7	1.1	0.7	0.4	0.0	1.5	0.85	48.0	272.5	5.83	6.9	51.8	0.23	0.29	0.21	0.74
		(6.5)	(1.5)	(2.0)	(1.0)	(1.0)	(0.5)	(0.0)	(1.5)	(0.85)	(47.3)	(211.5)	(1.84)	(7.0)	(38.0)	(0.00)	(0.00)	(0.00)	(1.00)
Large Core	90	6.7	1.4	2.9	1.1	0.7	0.4	0.0	1.3	0.84	47.2	281.4	8.72	5.6	62.3	0.37	0.22	0.18	0.92
		(6.5)	(1.5)	(3.0)	(1.0)	(0.5)	(0.0)	(0.0)	(1.5)	(0.90)	(46.3)	(197.0)	(1.91)	(6.0)	(34.5)	(0.00)	(0.00)	(0.00)	(1.00)
Large Growth	93	6.3	1.4	2.6	1.2	0.7	0.5	0.0	1.1	0.96	46.3	281.6	6.79	6.3	75.9	0.48	0.40	0.11	0.98
		(6.0)	(1.5)	(2.0)	(1.0)	(0.5)	(0.5)	(0.0)	(1.5)	(0.97)	(45.5)	(225.0)	(2.44)	(6.0)	(65.0)	(0.00)	(0.00)	(0.00)	(1.00)
Mid Value	21	7.2	1.5	3.0	1.2	0.7	0.5	0.0	1.5	1.05	48.3	193.7	2.80	5.5	54.4	0.29	0.14	0.57	0.95
		(7.0)	(1.5)	(3.0)	(1.0)	(0.8)	(0.5)	(0.0)	(1.5)	(1.01)	(46.3)	(158.0)	(1.48)	(6.0)	(46.4)	(0.00)	(0.00)	(1.00)	(1.00)
Mid Core	22	6.3	1.2	2.9	1.0	0.6	0.3	0.0	1.3	0.99	45.7	195.9	5.33	4.8	52.5	0.50	0.27	0.45	0.91
		(6.0)	(1.0)	(3.0)	(1.0)	(0.5)	(0.0)	(0.0)	(1.5)	(1.13)	(44.0)	(182.5)	(1.90)	(5.5)	(46.5)	(0.50)	(0.00)	(0.00)	(1.00)
Mid Growth	41	6.5	1.5	2.7	1.2	0.7	0.5	0.0	1.2	1.07	51.4	256.0	2.86	6.1	85.1	0.34	0.34	0.56	0.95
		(6.5)	(1.5)	(3.0)	(1.0)	(1.0)	(0.5)	(0.0)	(1.5)	(1.04)	(48.8)	(210.0)	(1.47)	(6.0)	(78.0)	(0.00)	(0.00)	(1.00)	(1.00)
Small Value	15	6.7	1.5	2.6	1.2	0.9	0.4	-0.1	1.4	1.13	50.5	177.7	2.23	7.2	40.2	0.20	0.20	1.00	0.87
		(6.5)	(1.5)	(2.0)	(1.0)	(1.0)	(0.0)	(0.0)	(1.5)	(1.24)	(53.8)	(178.0)	(1.73)	(7.0)	(33.0)	(0.00)	(0.00)	(1.00)	(1.00)
Small Core	24	7.0	1.3	3.3	1.1	0.7	0.4	0.0	1.3	1.03	42.1	180.8	2.90	4.2	42.2	0.33	0.17	0.88	0.42
		(6.8)	(1.5)	(4.0)	(1.0)	(0.5)	(0.5)	(0.0)	(1.8)	(1.10)	(41.0)	(160.5)	(1.49)	(4.0)	(39.1)	(0.00)	(0.00)	(1.00)	(0.00)
Small Growth	38	6.4	1.4	2.9	0.9	0.6	0.3	-0.1	1.2	1.14	45.5	200.2	1.46	5.6	89.9	0.26	0.16	0.79	0.74
		(6.5)	(1.5)	(3.0)	(1.0)	(0.5)	(0.3)	(0.0)	(1.5)	(1.19)	(44.1)	(177.0)	(0.95)	(6.0)	(82.0)	(0.00)	(0.00)	(1.00)	(1.00)
Panel C. Descriptive statistics of all samples																			
Mean		6.6	1.4	2.8	1.1	0.7	0.4	0.0	1.3	0.98	47.0	249.2	5.08	5.8	67.4	0.38	0.28	0.33	0.76
Median		6.5	1.5	3.0	1.0	0.5	0.5	0.0	1.5	1.00	46.0	199.0	1.66	6	51.0	0	0	0	1
Maximum		10.0	2.0	4.0	2.0	1.0	1.0	0.0	2.0	2.49	94.0	1047.0	160.93	26.0	453.0	1	1	1	1
Minimum		1.5	0.5	0.0	0.0	0.0	0.0	-1.5	0.0	0.04	5.0	18.0	0.0011	1.0	2.0	0	0	0	0
Std. Dev.		1.6	0.3	0.9	0.5	0.3	0.4	0.2	0.7	0.37	14.0	177.8	13.74	3.9	58.6	0.49	0.45	0.47	0.43
Observations		464	464	464	464	427	427	464	464	464	464	464	464	464	464	464	464	464	464

We also include dummies to denote whether the fund has specific style objectives in terms of size (*Size Objective*) or value-growth (*Value-Growth Objective*) since the level of style drift has been found to be influenced by the style of the fund (Brown, Harlow and Zhang, 2012; Wermers, 2012).

4.4 Summary and Conclusion

This chapter details the data and research method employed to test our three main hypotheses. In the next chapter, the empirical results are discussed.

CHAPTER 5

EMPIRICAL RESULTS

5.1 Introduction

This chapter discusses the empirical results. The results of the univariate tests are provided in Section 5.2, followed by Section 5.3 which presents the results of multivariate tests. Section 5.4 provides a summary of this chapter.

5.2 Univariate Results

Table 5.1 displays univariate results of differences in mean and median of the various measures of style drift between funds with "high" and "low" scores on the characteristics shown. Funds are classified as "High" or "Low" based on the median value. For RBSA Morningstar SDS, the association between fund stewardship measures and style drift is considerably strong, especially for the Size and Overall dimensions of SDS. The weakest relationship with stewardship is exhibited by Value SDS where *Overall Stewardship* and *Corporate Culture* are not significantly related to Value SDS. *Regulatory History* is the only stewardship component that is not significantly related to style drift in any dimension of SDS.

Table 5.1
Univariate tests of mean differences

Fund style consistency is measured using the style drift score (SDS), style consistency metric, and style dispersion metric. SDS is measured using the method in Idzorek and Bertsch (2004) and Morningstar. The bases for SDS computation are RBSA (return-based style analysis) and HBSA (holdings-based style analysis). Style consistency metric measures the extent of historical style movement in the style box based on HBSA. Style dispersion metric is the average degree of scatter of the holdings throughout the observation period. In any measure, funds with lower scores are more consistent than those with higher scores. Style consistency is measured in size dimension (*Size*), value-growth dimension (*Value*), or combination of both (*Overall*). Funds are classified as "High" or "Low" based on the median value. *Overall Stewardship, Board Quality, Corporate Culture, Manager Incentives, Manager Compensation, Manager Ownership, Regulatory History,* and *Fees* are numeric scores of Morningstar stewardship grades. *Net expense ratio* is the percentage of fund assets paid for operating expenses and management fees. *Return rank* is the average of mid-year return rank percentile (for a 4-year observation period) of the fund relative to its peers. *Age* is the number of months since the date of inception of the fund, and *Size* is the fund's total asset under management. *No of classes* is the number of share classes offered by the fund. *Turnover ratio* is the minimum of sales or purchases divided by average monthly net assets. *Single manager* scores one if fund is managed by one manager, and zero otherwise. *Management change* scores one if there was a total change in managers during the observation period (October 2007-September 2011), and zero otherwise. *Size objective* and *Value-Growth objective* scores one if the fund has a specific style objective in terms of size and value-growth respectively, and zero otherwise. The results of median difference tests are reported in parentheses. ***, **, * denote significance levels of 1%, 5% and 10% respectively.

	RBSA Morningstar SDS								
	Overall			*Size*			*Value*		
	Low	High	p-value	Low	High	p-value	Low	High	p-value
Overall Stewardship	20.75	19.43	0.019 **	13.37	11.76	0.002 ***	15.07	14.95	0.796
	(20.74)	(19.66)	(0.043) **	(12.94)	(11.06)	(0.003) ***	(14.97)	(14.38)	(0.909)
Board Quality	21.82	19.34	0.000 ***	14.34	11.82	0.000 ***	15.81	14.62	0.015 **
	(21.92)	(19.28)	(0.000) ***	(14.13)	(11.30)	(0.000) ***	(15.54)	(14.02)	(0.008) ***
Corporate Culture	20.51	19.26	0.045 **	12.98	11.80	0.044 **	15.10	14.79	0.542
	(20.21)	(19.76)	(0.234)	(12.44)	(11.25)	(0.081) *	(14.81)	(14.47)	(0.782)
Manager Incentives	19.40	21.41	0.000 ***	12.06	13.65	0.003 ***	14.35	16.11	0.000 ***
	(19.30)	(21.09)	(0.001) ***	(11.47)	(13.74)	(0.001) ***	(13.79)	(15.64)	(0.000) ***
Manager Compensation	21.17	19.28	0.001 ***	13.60	11.69	0.000 ***	15.59	14.69	0.057 *
	(21.58)	(19.17)	(0.001) ***	(13.16)	(11.29)	(0.000) ***	(15.54)	(13.95)	(0.057) *
Manager Ownership	18.76	21.60	0.000 ***	11.60	13.63	0.000 ***	13.90	16.29	0.000 ***
	(18.50)	(21.43)	(0.000) ***	(11.05)	(13.60)	(0.000) ***	(13.30)	(16.14)	(0.000) ***
Regulatory History	19.21	20.19	0.584	12.55	12.66	0.947	12.92	15.07	0.145
	(19.58)	(20.17)	(0.625)	(9.89)	(12.31)	(0.425)	(12.90)	(14.81)	(0.166)
Fees	21.21	18.49	0.000 ***	13.58	11.20	0.000 ***	15.57	14.13	0.002 ***
	(21.04)	(18.89)	(0.000) ***	(13.09)	(10.38)	(0.000) ***	(15.22)	(13.95)	(0.006) ***
Net expense ratio	18.89	21.48	0.000 ***	11.76	13.58	0.001 ***	14.08	15.98	0.000 ***
	(18.61)	(21.64)	(0.000) ***	(11.12)	(13.14)	(0.000) ***	(13.64)	(16.37)	(0.000) ***
Return rank	20.01	20.30	0.602	12.62	12.69	0.893	15.02	15.01	0.975
	(19.39)	(20.31)	(0.488)	(12.12)	(12.37)	(0.930)	(14.55)	(15.00)	(0.780)
Age	20.28	20.05	0.681	12.71	12.60	0.839	15.13	14.90	0.624
	(20.63)	(19.86)	(0.276)	(12.75)	(11.59)	(0.622)	(15.01)	(14.43)	(0.431)
Size	21.32	19.02	0.000 ***	13.65	11.67	0.000 ***	15.63	14.41	0.008 ***
	(21.09)	(19.16)	(0.000) ***	(13.27)	(11.31)	(0.001) ***	(15.26)	(14.07)	(0.028) **
No of classes	20.44	19.73	0.210	13.19	11.84	0.012 **	14.99	15.05	0.910
	(20.97)	(19.59)	(0.041) **	(12.98)	(11.29)	(0.010) **	(14.81)	(14.73)	(0.884)
Turnover ratio	19.29	21.11	0.001 ***	11.75	13.63	0.000 ***	14.74	15.33	0.200
	(19.44)	(20.69)	(0.019) **	(11.30)	(13.08)	(0.001) ***	(14.73)	(14.81)	(0.403)
Single manager	20.26	20.00	0.662	12.38	13.12	0.173	15.35	14.45	0.058 *
	(20.02)	(20.68)	(0.849)	(11.53)	(13.16)	(0.095) *	(15.01)	(14.34)	(0.105)
Management change	19.88	20.98	0.083 *	12.29	13.70	0.019 **	15.00	15.05	0.932
	(20.21)	(20.02)	(0.354)	(12.18)	(12.65)	(0.103)	(14.99)	(13.62)	(0.608)
Size objective	20.35	19.77	0.326	13.08	11.79	0.021 **	14.96	15.13	0.722
	(20.19)	(20.09)	(0.649)	(12.35)	(12.12)	(0.137)	(14.60)	(15.01)	(0.617)
Value-Growth objective	22.50	19.41	0.000 ***	14.40	12.10	0.000 ***	16.62	14.50	0.000 ***
	(23.31)	(19.66)	(0.000) ***	(13.27)	(11.89)	(0.014) **	(17.13)	(14.22)	(0.000) ***

Table 5.1 (continued)

	RBSA Idzorek & Bertsch SDS									HBSA Idzorek & Bertsch SDS								
	Overall			*Size*			*Value*			*Overall*			*Size*			*Value*		
	Low	High	p-value	Low	High	p-value	Low	High	p-value	Low	High	p-value	Low	High	p-value	Low	High	p-value
Overall Stewardship	0.402	0.370	0.003 ***	0.298	0.259	0.000 ***	0.332	0.313	0.054 *	10.94	9.85	0.007 ***	8.40	6.18	0.000 ***	10.05	9.38	0.126
	(0.400)	(0.370)	(0.008) ***	(0.280)	(0.250)	(0.000) ***	(0.330)	(0.305)	(0.135)	(10.17)	(8.77)	(0.000) ***	(7.20)	(5.50)	(0.000) ***	(8.97)	(8.38)	(0.016) **
Board Quality	0.421	0.371	0.000 ***	0.314	0.265	0.000 ***	0.347	0.312	0.001 ***	11.18	10.11	0.012 **	8.34	6.99	0.002 ***	10.34	9.47	0.059 *
	(0.420)	(0.370)	(0.000) ***	(0.310)	(0.260)	(0.000) ***	(0.340)	(0.300)	(0.001) ***	(10.11)	(9.54)	(0.006) ***	(7.14)	(6.02)	(0.001) ***	(9.32)	(8.46)	(0.008) ***
Corporate Culture	0.397	0.362	0.004 ***	0.290	0.259	0.010 **	0.330	0.306	0.031 **	10.69	9.85	0.064 *	7.84	6.33	0.001 ***	9.93	9.30	0.195
	(0.390)	(0.370)	(0.039) **	(0.280)	(0.260)	(0.016) **	(0.320)	(0.310)	(0.169)	(9.83)	(8.20)	(0.003) ***	(6.61)	(5.19)	(0.000) ***	(8.88)	(7.80)	(0.009) ***
Manager Incentives	0.380	0.399	0.093 *	0.275	0.292	0.121	0.317	0.334	0.079 *	10.63	10.20	0.298	7.70	6.98	0.089 *	9.98	9.39	0.189
	(0.380)	(0.390)	(0.085) *	(0.270)	(0.280)	(0.050) **	(0.310)	(0.330)	(0.036) **	(9.82)	(9.45)	(0.177)	(6.56)	(6.05)	(0.072) *	(8.92)	(8.57)	(0.206)
Manager Compensation	0.407	0.368	0.000 ***	0.301	0.258	0.000 ***	0.337	0.311	0.012 **	11.04	9.87	0.006 ***	7.91	6.97	0.029 **	10.28	9.15	0.012 **
	(0.410)	(0.360)	(0.000) ***	(0.290)	(0.250)	(0.000) ***	(0.340)	(0.310)	(0.023) **	(10.28)	(9.08)	(0.002) ***	(7.01)	(6.02)	(0.009) ***	(9.31)	(8.26)	(0.003) ***
Manager Ownership	0.363	0.410	0.000 ***	0.260	0.298	0.001 ***	0.302	0.344	0.000 ***	9.98	10.92	0.026 **	7.38	7.50	0.791	9.26	10.16	0.047 **
	(0.350)	(0.410)	(0.000) ***	(0.250)	(0.290)	(0.000) ***	(0.280)	(0.340)	(0.000) ***	(9.34)	(9.86)	(0.048) **	(6.46)	(6.34)	(0.958)	(8.57)	(9.18)	(0.031) **
Regulatory History	0.412	0.387	0.468	0.286	0.281	0.873	0.327	0.323	0.898	10.94	10.45	0.620	7.44	7.44	0.999	11.01	9.71	0.220
	(0.410)	(0.390)	(0.639)	(0.250)	(0.270)	(0.687)	(0.290)	(0.320)	(0.892)	(9.85)	(9.71)	(0.531)	(6.83)	(6.36)	(0.694)	(8.42)	(8.77)	(0.410)
Fees	0.402	0.364	0.001 ***	0.296	0.257	0.000 ***	0.334	0.307	0.008 ***	10.85	9.84	0.015 **	8.01	6.48	0.000 ***	9.92	9.50	0.342
	(0.400)	(0.350)	(0.000) ***	(0.285)	(0.240)	(0.000) ***	(0.330)	(0.290)	(0.005) ***	(10.14)	(8.75)	(0.001) ***	(6.93)	(5.52)	(0.000) ***	(9.03)	(8.36)	(0.022) **
Net expense ratio	0.364	0.412	0.000 ***	0.261	0.302	0.000 ***	0.305	0.343	0.000 ***	9.62	11.29	0.000 ***	6.32	8.51	0.000 ***	9.15	10.35	0.005 ***
	(0.350)	(0.410)	(0.000) ***	(0.250)	(0.290)	(0.000) ***	(0.290)	(0.340)	(0.000) ***	(8.89)	(10.53)	(0.000) ***	(5.24)	(7.67)	(0.000) ***	(8.49)	(9.25)	(0.001) ***
Return rank	0.388	0.387	0.969	0.325	0.322	0.812	0.282	0.280	0.859	10.56	10.39	0.659	7.74	7.16	0.158	9.59	9.92	0.456
	(0.390)	(0.390)	(0.962)	(0.270)	(0.270)	(0.919)	(0.320)	(0.320)	(0.859)	(9.74)	(9.72)	(0.994)	(6.66)	(6.08)	(0.115)	(8.63)	(8.97)	(0.168)
Age	0.389	0.386	0.798	0.284	0.278	0.536	0.324	0.323	0.867	10.26	10.68	0.299	7.58	7.29	0.477	9.49	10.03	0.212
	(0.390)	(0.380)	(0.507)	(0.280)	(0.270)	(0.510)	(0.320)	(0.310)	(0.642)	(9.74)	(9.71)	(0.476)	(6.49)	(6.32)	(0.585)	(8.55)	(8.94)	(0.249)
Size	0.412	0.363	0.000 ***	0.304	0.259	0.000 ***	0.340	0.307	0.001 ***	11.58	9.37	0.000 ***	8.43	6.42	0.000 ***	10.73	8.81	0.000 ***
	(0.400)	(0.365)	(0.000) ***	(0.290)	(0.260)	(0.000) ***	(0.340)	(0.310)	(0.007) ***	(10.77)	(8.89)	(0.000) ***	(7.40)	(5.54)	(0.000) ***	(9.35)	(8.30)	(0.000) ***
No of classes	0.392	0.381	0.301	0.292	0.265	0.014 **	0.324	0.323	0.906	10.74	10.06	0.095 *	7.70	7.04	0.120	10.03	9.34	0.119
	(0.390)	(0.380)	(0.091) *	(0.285)	(0.260)	(0.008) ***	(0.320)	(0.320)	(0.765)	(9.76)	(9.72)	(0.315)	(6.45)	(6.20)	(0.525)	(9.01)	(8.51)	(0.327)
Turnover ratio	0.368	0.409	0.000 ***	0.256	0.308	0.000 ***	0.311	0.337	0.009 ***	9.49	11.50	0.000 ***	6.12	8.80	0.000 ***	8.90	10.67	0.000 ***
	(0.370)	(0.390)	(0.002) ***	(0.250)	(0.290)	(0.000) ***	(0.310)	(0.330)	(0.030) **	(8.76)	(10.78)	(0.000) ***	(5.25)	(7.91)	(0.000) ***	(8.25)	(9.41)	(0.000) ***
Single manager	0.387	0.388	0.946	0.276	0.289	0.226	0.327	0.318	0.393	10.58	10.29	0.486	7.21	7.82	0.150	9.84	9.63	0.645
	(0.385)	(0.390)	(0.785)	(0.270)	(0.290)	(0.149)	(0.325)	(0.310)	(0.283)	(9.78)	(9.49)	(0.567)	(6.22)	(6.45)	(0.282)	(8.74)	(8.82)	(0.862)
Management change	0.385	0.394	0.502	0.275	0.298	0.055 *	0.323	0.323	0.962	10.31	10.89	0.195	7.08	8.36	0.005 ***	9.64	10.08	0.360
	(0.390)	(0.390)	(0.817)	(0.270)	(0.280)	(0.091) *	(0.320)	(0.310)	(0.644)	(9.54)	(9.79)	(0.120)	(6.19)	(6.68)	(0.005) ***	(8.73)	(8.90)	(0.158)
Size objective	0.397	0.367	0.009 ***	0.290	0.263	0.016 **	0.331	0.307	0.019 **	10.86	9.67	0.005 ***	7.42	7.48	0.887	10.39	8.48	0.000 ***
	(0.390)	(0.390)	(0.071) *	(0.280)	(0.270)	(0.116)	(0.320)	(0.320)	(0.102)	(9.81)	(9.43)	(0.023) **	(6.18)	(6.51)	(0.404)	(9.21)	(7.86)	(0.000) ***
Value-Growth objective	0.464	0.363	0.000 ***	0.334	0.264	0.000 ***	0.387	0.303	0.000 ***	13.16	9.64	0.000 ***	9.18	6.90	0.000 ***	12.63	8.88	0.000 ***
	(0.475)	(0.370)	(0.000) ***	(0.330)	(0.270)	(0.000) ***	(0.390)	(0.300)	(0.000) ***	(13.09)	(9.22)	(0.000) ***	(8.45)	(6.05)	(0.000) ***	(11.67)	(8.44)	(0.000) ***

Table 5.1 (continued)

	Style Consistency Metric									Style Dispersion Metric								
	Overall			*Size*			*Value*			*Overall*			*Size*			*Value*		
	Low	High	p-value	Low	High	p-value	Low	High	p-value	Low	High	p-value	Low	High	p-value	Low	High	p-value
Overall Stewardship	18.27	16.38	0.056 *	11.99	8.44	0.000 ***	24.30	21.79	0.040 **	147.62	144.04	0.054 *	77.64	70.64	0.000 ***	124.17	124.22	0.975
	(16.64)	(12.45)	(0.000) ***	(9.73)	(7.06)	(0.000) ***	(21.46)	(17.89)	(0.001) ***	(148.06)	(144.94)	(0.075) *	(79.18)	(72.12)	(0.000) ***	(124.94)	(124.51)	(0.948)
Board Quality	18.24	17.06	0.253	12.07	9.64	0.000 ***	25.36	22.14	0.012 **	150.57	143.82	0.001 ***	79.34	72.24	0.000 ***	126.50	123.04	0.031 **
	(16.26)	(13.82)	(0.009) ***	(9.19)	(8.09)	(0.000) ***	(22.39)	(18.54)	(0.001) **	(151.67)	(144.31)	(0.001) ***	(79.60)	(73.77)	(0.001) ***	(128.24)	(123.13)	(0.029) **
Corporate Culture	17.61	17.02	0.597	11.04	8.83	0.001 ***	23.63	22.06	0.251	146.45	145.03	0.496	75.79	71.35	0.037 **	123.99	124.74	0.663
	(15.46)	(13.07)	(0.011) **	(8.99)	(6.81)	(0.000) ***	(21.19)	(17.71)	(0.010) ***	(147.73)	(144.26)	(0.520)	(76.93)	(72.82)	(0.053) *	(124.72)	(124.88)	(0.707)
Manager Incentives	18.14	16.27	0.064 *	10.81	9.82	0.114	24.25	21.43	0.025 **	145.07	147.78	0.155	73.80	76.00	0.260	123.40	125.54	0.172
	(15.35)	(14.55)	(0.350)	(8.68)	(7.88)	(0.036) **	(21.20)	(18.57)	(0.068) *	(144.59)	(148.08)	(0.171)	(76.62)	(75.51)	(0.344)	(122.97)	(126.80)	(0.156)
Manager Compensation	18.83	16.27	0.014 **	11.22	9.52	0.008 ***	24.97	21.31	0.004 ***	148.43	143.71	0.014 **	76.47	72.29	0.034 **	125.81	122.86	0.060 *
	(15.75)	(13.01)	(0.010) **	(9.09)	(7.57)	(0.001) ***	(21.40)	(18.34)	(0.002) ***	(149.52)	(143.64)	(0.017) **	(78.23)	(72.63)	(0.021) **	(126.65)	(122.67)	(0.078) *
Manager Ownership	16.84	18.24	0.179	10.42	10.35	0.909	22.64	23.65	0.430	146.32	145.90	0.829	74.76	74.07	0.729	124.32	124.39	0.965
	(13.75)	(15.64)	(0.054) *	(8.21)	(8.36)	(0.917)	(19.33)	(20.91)	(0.132)	(145.10)	(147.65)	(0.897)	(76.70)	(74.86)	(0.737)	(123.26)	(124.98)	(0.887)
Regulatory History	16.83	17.48	0.788	11.21	10.42	0.593	24.07	23.17	0.764	143.63	146.18	0.574	77.15	74.49	0.566	119.38	124.41	0.177
	(15.81)	(15.08)	(0.691)	(10.13)	(8.27)	(0.139)	(23.04)	(20.32)	(0.448)	(149.49)	(147.12)	(0.937)	(80.57)	(76.04)	(0.649)	(115.52)	(124.91)	(0.271)
Fees	17.97	16.58	0.167	11.20	9.19	0.001 ***	23.30	23.06	0.848	145.79	146.53	0.698	75.88	72.48	0.080 *	123.08	126.04	0.058 *
	(15.88)	(11.75)	(0.001) ***	(9.08)	(7.34)	(0.000) ***	(21.23)	(18.29)	(0.068) *	(146.18)	(148.35)	(0.469)	(76.43)	(75.98)	(0.125)	(123.26)	(127.60)	(0.020) **
Net expense ratio	15.47	19.36	0.000 ***	9.47	11.40	0.001 ***	22.28	24.12	0.129	150.12	142.16	0.000 ***	77.89	71.43	0.001 ***	127.04	121.43	0.000 ***
	(12.63)	(16.67)	(0.000) ***	(7.86)	(9.31)	(0.000) ***	(18.90)	(21.21)	(0.094) *	(150.67)	(141.68)	(0.000) ***	(78.07)	(70.22)	(0.000) ***	(127.92)	(121.59)	(0.000) ***
Return rank	17.36	17.54	0.852	10.51	10.39	0.847	22.52	23.84	0.277	145.96	146.17	0.912	76.21	73.15	0.105	123.00	125.27	0.134
	(15.20)	(15.09)	(0.707)	(8.35)	(8.47)	(0.740)	(19.38)	(21.16)	(0.127)	(146.13)	(147.87)	(0.772)	(77.96)	(74.85)	(0.107)	(122.63)	(125.99)	(0.089) *
Age	18.14	16.76	0.155	10.52	10.38	0.808	23.04	23.39	0.774	145.50	146.64	0.537	72.64	76.57	0.037 **	124.63	123.75	0.563
	(15.35)	(14.59)	(0.467)	(8.35)	(8.38)	(0.724)	(19.85)	(20.65)	(0.501)	(145.56)	(147.94)	(0.535)	(75.26)	(77.69)	(0.049) **	(124.38)	(124.88)	(0.627)
Size	19.42	15.39	0.000 ***	11.86	8.93	0.000 ***	25.08	21.26	0.002 ***	145.13	147.31	0.245	74.75	74.45	0.879	122.88	125.89	0.050 **
	(16.68)	(13.07)	(0.000) ***	(9.61)	(7.46)	(0.000) ***	(21.52)	(18.53)	(0.002) ***	(144.41)	(148.16)	(0.199)	(75.49)	(76.59)	(0.994)	(122.50)	(127.60)	(0.024) **
No of classes	18.24	16.23	0.044 **	11.06	9.51	0.013 **	24.12	21.82	0.064 *	147.92	143.23	0.013 **	76.17	72.20	0.039 **	125.25	122.56	0.082 *
	(15.60)	(13.82)	(0.279)	(8.51)	(8.30)	(0.210)	(20.98)	(19.61)	(0.179)	(149.83)	(142.99)	(0.004) ***	(77.35)	(72.96)	(0.027) **	(127.15)	(122.52)	(0.042) **
Turnover ratio	14.54	20.47	0.000 ***	8.40	12.57	0.000 ***	20.14	26.41	0.000 ***	145.35	146.69	0.469	72.37	76.80	0.019 **	124.87	123.42	0.341
	(11.55)	(17.55)	(0.000) ***	(7.13)	(10.28)	(0.000) ***	(18.00)	(22.30)	(0.000) ***	(147.03)	(147.09)	(0.529)	(73.41)	(79.24)	(0.012) **	(125.63)	(123.87)	(0.283)
Single manager	17.20	17.87	0.502	9.93	11.31	0.027 **	22.58	24.26	0.177	144.40	148.83	0.020 **	72.52	78.07	0.004 ***	123.57	125.22	0.291
	(14.12)	(17.18)	(0.052) *	(8.23)	(9.13)	(0.065) *	(18.77)	(22.08)	(0.023) **	(144.94)	(151.23)	(0.018) **	(73.22)	(79.42)	(0.003) ***	(124.27)	(127.19)	(0.278)
Management change	16.66	19.48	0.009 ***	9.82	12.06	0.001 ***	21.97	26.38	0.001 ***	144.48	150.13	0.006 ***	73.36	77.78	0.035 **	122.99	127.24	0.012 **
	(13.82)	(17.42)	(0.001) ***	(8.06)	(9.98)	(0.000) ***	(18.80)	(22.07)	(0.000) ***	(144.54)	(153.25)	(0.003) ***	(75.38)	(78.21)	(0.031) **	(123.59)	(128.24)	(0.011) **
Size objective	17.79	16.74	0.313	11.32	8.65	0.000 ***	25.01	19.52	0.000 ***	151.43	135.03	0.000 ***	82.49	58.37	0.000 ***	125.77	120.93	0.003 ***
	(15.39)	(13.66)	(0.124)	(9.28)	(7.29)	(0.000) ***	(21.55)	(17.63)	(0.000) ***	(152.22)	(134.42)	(0.000) ***	(82.74)	(53.94)	(0.000) ***	(127.34)	(120.94)	(0.002) ***
Value-Growth objective	21.55	16.18	0.000 ***	12.61	9.78	0.000 ***	29.60	21.24	0.000 ***	144.54	146.54	0.358	77.56	73.70	0.082 *	119.72	125.57	0.001 ***
	(18.48)	(13.93)	(0.000) ***	(11.60)	(8.10)	(0.000) ***	(24.63)	(18.90)	(0.000) ***	(144.84)	(147.89)	(0.393)	(78.81)	(75.61)	(0.116)	(121.74)	(125.89)	(0.003) ***

The relationship between Stewardship and style drift is generally negative, except for *Manager Incentives* and *Manager Ownership*. We also observe more or less similar findings in other style consistency measures, except for the Style Dispersion Metric, which exhibits the weakest relationship with stewardship components.

Table 5.2 shows that, as expected, there is a high correlation between the overall stewardship score and the individual stewardship component scores. Therefore, we will use only one of them in the regressions at any one time. The correlations between the remaining variables are quantitatively small, suggesting that multicollinearity is not likely to pose a significant problem.

5.3 Multivariate Analysis

Next, we run regressions of style drift on stewardship quality. The results for style consistency measured using the methods in Idzorek and Bertsch (2004) and Morningstar are both reported in Tables 5.3 (returns-based) and 5.4 (holding-based). In both tables, we report the results for the overall style consistency in Panel A; style consistency on the size dimension in Panel B; and style consistency on the value-growth dimension in Panel C. In all the regression specifications, we measure fund stewardship using either the *Overall Stewardship* score or its component scores. Control variables are included in all specifications.

Table 5.2
Pearson correlation matrix

Overall Stewardship, Board Quality, Corporate Culture, Manager Incentives, Manager Compensation, Manager Ownership, Regulatory History, and *Fees* are numeric scores of Morningstar stewardship grades. *Net expense ratio* is the percentage of fund assets paid for operating expenses and management fees. *Return rank* is the average of mid-year return rank percentile (for a 4-year observation period) of a particular fund relative to its peers. *Age* is the number of months since the date of inception of the fund, and *Size* is the fund's total asset under management. *No of classes* is the number of share classes offered by the fund. *Turnover ratio* is the minimum of sales or purchases divided by average monthly net assets. *Single manager* indicates if fund is managed by one manager. *Management change* indicates whether there was a total change in managers during the observation period (October 2007-September 2011). *Size objective* and *Value-Growth objective* indicate if fund has a specific style objective in terms of size and value-growth respectively.

	Overall Stewardship	*Board Quality*	*Corporate Culture*	*Manager Incentives*	*Manager Compensation*	*Manager Ownership*	*Regulatory History*	*Fees*	*Net expense ratio*	*Return rank*	*Age*	*Size*	*No of classes*	*Turnover ratio*	*Single manager (dummy)*	*Management change (dummy)*	*Size objective (dummy)*	*Value-Growth objective (dummy)*
Overall Stewardship	1.00																	
Board Quality	0.49	1.00																
Corporate Culture	0.78	0.20	1.00															
Manager Incentives	0.39	0.10	0.19	1.00														
Manager Compensation	0.46	0.43	0.13	0.31	1.00													
Manager Ownership	0.39	0.03	0.25	0.85	0.06	1.00												
Regulatory History	0.24	0.04	0.23	0.14	0.03	0.07	1.00											
Fees	0.55	0.16	0.15	-0.07	0.16	-0.11	-0.06	1.00										
Net expense ratio	-0.41	-0.07	-0.29	0.11	-0.06	0.13	-0.11	-0.54	1.00									
Return rank	-0.20	-0.03	-0.22	-0.08	-0.07	-0.07	-0.17	-0.04	0.19	1.00								
Age	0.06	-0.04	-0.07	0.09	0.05	0.08	0.00	0.16	0.02	-0.06	1.00							
Size	0.33	0.06	0.17	0.20	0.17	0.18	0.11	0.28	-0.44	-0.21	0.31	1.00						
No of classes	-0.15	0.17	-0.28	0.01	0.18	-0.07	-0.08	-0.07	0.22	0.07	0.10	0.05	1.00					
Turnover ratio	-0.40	-0.10	-0.32	-0.22	-0.14	-0.20	-0.06	-0.25	0.21	0.15	-0.01	-0.30	0.09	1.00				
Single manager (dummy)	-0.08	-0.23	-0.07	0.01	-0.06	0.01	-0.01	0.04	-0.16	-0.08	0.00	0.07	-0.20	0.10	1.00			
Management change (dummy)	-0.17	-0.06	-0.23	-0.07	0.04	-0.10	-0.06	0.00	0.03	0.12	0.08	-0.12	-0.01	0.12	0.15	1.00		
Size objective (dummy)	0.00	0.03	0.06	-0.14	-0.01	-0.13	-0.02	-0.01	0.11	0.00	-0.23	-0.13	0.07	0.02	-0.15	-0.09	1.00	
Value-Growth objective (dummy)	-0.05	0.13	-0.04	0.01	0.02	0.00	0.03	-0.14	-0.05	0.14	-0.04	0.00	0.16	-0.04	-0.08	0.02	0.05	1.00

Recall that a lower SDS score indicates greater style consistency and thus lower style drift. Panel A of Table 5.3 shows the fund's *Overall Stewardship* is insignificant, irrespective of how we measure SDS (specifications (1) and (4)). Therefore, better overall fund stewardship quality does not necessarily increase the monitoring of fund investment style. Using the individual stewardship component measures, specifications (2) and (5) show *Manager Incentives* has a significantly positive coefficient, suggesting that funds with a better managerial incentive scheme exhibit less style consistency, contrary to our expectations.

We are intrigued by this finding and investigate it further by looking at the subcomponents of *Manager Incentives*, i.e., *Manager Ownership* and *Manager Compensation*. As specifications (3) and (6) show, both the subcomponents are significant but have opposing signs. Specifically, *Manager Compensation* has a significantly negative coefficient while *Manager Ownership* has a significantly positive one. The MS Grade methodology considers funds that reward long-term performance as having a better manager compensation structure. Our result suggests that a compensation scheme that rewards long-term performance is able to moderate fund managers' interests to pursue short-term performance. For this reason, funds with a better compensation structure are less likely to take on short-term performance-chasing activities such risk-shifting and style drifting, which is in line with hypothesis H1c.

Table 5.3
OLS regressions of RBSA style consistency on fund stewardship

Fund actual style is estimated using Return-Based Style Analysis (RBSA), and then its consistency is measured using Style Drift Score (SDS) method in Idzorek and Bertsch (2004) and Morningstar. Funds with lower SDS are more consistent than those with higher scores. SDS is measured either in size dimension, value-growth dimension, or combination of both. Results for Overall SDS, the style consistency measure for both size and value-growth dimensions, are in Panel A; Size SDS, the style consistency measure for the size dimension, in Panel B; and Value SDS, the style consistency measure for the value-growth dimension, in Panel C. *Overall Stewardship, Board Quality, Corporate Culture, Manager Incentives, Manager Compensation, Manager Ownership, Regulatory History,* and *Fees* are numeric scores of Morningstar stewardship grades. *Net expense ratio* is the percentage of fund assets paid for operating expenses and management fees. *Return rank* is the average of mid-year return rank percentile (for a 4-year observation period) of the fund relative to its peers. *Age* is the number of months since the date of inception of the fund, and *Size* is the fund's total asset under management. *No of classes* is the number of share classes offered by the fund. *Turnover ratio* is the minimum of sales or purchases divided by average monthly net assets. *Single manager* scores one if fund is managed by one manager, and zero otherwise. *Management change* scores one if there was a total change in managers during the observation period (October 2007-September 2011), and zero otherwise. *Size objective* and *Value-Growth objective* scores one if the fund has a specific style objective in terms of size and value-growth respectively, and zero otherwise. *p*-values are reported in parentheses. ***, **, * denote significance levels of 1%, 5% and 10% respectively.

	Idzorek & Bertsch SDS			Morningstar SDS		
	(1)	(2)	(3)	(4)	(5)	(6)
	Panel A: Overall Style Consistency					
Overall Stewardship	-0.217			-0.061		
	(0.555)			(0.767)		
Board Quality		-1.780	0.000		-1.362	-0.075
		(0.215)	(1.000)		(0.122)	(0.936)
Corporate Culture		0.194	-0.201		0.199	0.080
		(0.771)	(0.758)		(0.574)	(0.809)
Manager Incentives		1.892 **			1.597 ***	
		(0.031)			(0.004)	
Manager Compensation			-3.052 *			-1.649 *
			(0.076)			(0.095)
Manager Ownership			5.331 ***			3.456 ***
			(0.000)			(0.000)
Regulatory History		-0.070	-4.184 *		1.618	-2.580 ***
		(0.982)	(0.073)		(0.411)	(0.006)
Net expense ratio		11.997 ***	10.458 ***		6.699 ***	5.805 ***
		(0.000)	(0.000)		(0.000)	(0.000)
Return rank	-0.005	-0.027	-0.018	-0.017	-0.029	-0.026
	(0.904)	(0.446)	(0.612)	(0.438)	(0.127)	(0.184)
Ln(Age)	-0.221	-2.543	-1.883	0.410	-0.878	-0.944
	(0.925)	(0.245)	(0.365)	(0.742)	(0.455)	(0.389)
Ln(Size)	-4.511 ***	-1.815 *	-2.359 **	-2.533 ***	-1.134 **	-1.321 ***
	(0.000)	(0.067)	(0.012)	(0.000)	(0.026)	(0.006)
No of classes	-0.195 *	-0.410 ***	-0.327 ***	-0.108	-0.221 ***	-0.150 ***
	(0.100)	(0.000)	(0.003)	(0.103)	(0.000)	(0.010)
Turnover ratio	3.299 ***	3.440 ***	3.550 ***	1.026 **	1.135 **	1.187 **
	(0.001)	(0.000)	(0.001)	(0.029)	(0.013)	(0.013)
Single manager	-1.372	-0.650	-0.773	-0.749	-0.366	-0.246
	(0.192)	(0.466)	(0.366)	(0.190)	(0.460)	(0.607)
Management change	-0.431	-0.007	0.529	0.635	0.882	1.208 **
	(0.677)	(0.994)	(0.611)	(0.261)	(0.109)	(0.044)
Size objective	-3.607 ***	-4.039 ***	-3.388 ***	-0.911 *	-1.089 **	-0.806 *
	(0.000)	(0.000)	(0.000)	(0.084)	(0.016)	(0.074)
Value-Growth objective	-9.421 ***	-8.392 ***	-8.711 ***	-2.765 ***	-2.218 ***	-2.526 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
Constant	90.427 ***	59.003 ***	63.683 ***	46.229 ***	29.633 ***	31.936 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Adjusted R-squared	0.274	0.396	0.435	0.149	0.314	0.364
Included observations	437	437	418	437	437	418

Table 5.3 (Continued)

	Idzorek & Bertsch SDS			Morningstar SDS		
	(1)	(2)	(3)	(4)	(5)	(6)
	Panel B: Size Consistency					
Overall Stewardship	-0.272			-0.135		
	(0.450)			(0.480)		
Board Quality		-1.945	-0.671		-1.124	0.007
		(0.197)	(0.672)		(0.187)	(0.994)
Corporate Culture		0.108	-0.141		0.095	-0.016
		(0.870)	(0.829)		(0.784)	(0.962)
Manager Incentives		1.805 **			1.117 **	
		(0.036)			(0.030)	
Manager Compensation			-2.591			-1.671 *
			(0.128)			(0.084)
Manager Ownership			4.649 ***			2.659 ***
			(0.000)			(0.000)
Regulatory History		1.087	2.868 *		0.974	0.923
		(0.769)	(0.065)		(0.553)	(0.332)
Net expense ratio		11.960 ***	10.743 ***		6.053 ***	5.303 ***
		(0.000)	(0.000)		(0.000)	(0.000)
Return rank	-0.048	-0.070 **	-0.061 *	-0.028	-0.039 **	-0.037 *
	(0.265)	(0.044)	(0.087)	(0.208)	(0.033)	(0.059)
Ln(Age)	-2.457	-4.784 **	-4.082 *	-0.357	-1.535	-1.403
	(0.296)	(0.031)	(0.054)	(0.743)	(0.149)	(0.168)
Ln(Size)	-3.262 ***	-0.613	-1.006	-1.613 ***	-0.319	-0.455
	(0.001)	(0.496)	(0.253)	(0.001)	(0.475)	(0.301)
No of classes	-0.370 ***	-0.582 ***	-0.504 ***	-0.165 ***	-0.268 ***	-0.206 ***
	(0.003)	(0.000)	(0.000)	(0.009)	(0.000)	(0.001)
Turnover ratio	4.556 ***	4.670 ***	4.710 ***	1.516 ***	1.605 ***	1.651 ***
	(0.000)	(0.000)	(0.000)	(0.002)	(0.001)	(0.001)
Single manager	-0.743	-0.038	0.150	-0.096	0.257	0.496
	(0.452)	(0.966)	(0.863)	(0.846)	(0.590)	(0.307)
Management change	1.171	1.566	2.099 **	0.854	1.069 **	1.398 ***
	(0.281)	(0.117)	(0.042)	(0.122)	(0.034)	(0.010)
Size objective	-3.327 ***	-3.752 ***	-3.071 ***	-1.455 ***	-1.651 ***	-1.291 ***
	(0.001)	(0.000)	(0.001)	(0.005)	(0.001)	(0.005)
Value-Growth objective	-5.889 ***	-4.872 ***	-4.692 ***	-1.780 **	-1.267 *	-1.268 *
	(0.000)	(0.000)	(0.001)	(0.011)	(0.053)	(0.058)
Constant	72.564 ***	41.870 ***	44.396 ***	32.173 ***	16.881 ***	17.809 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Adjusted R-squared	0.213	0.334	0.364	0.131	0.267	0.301
Included observations	437	437	418	437	437	418

Table 5.3 (Continued)

	Idzorek & Bertsch SDS			Morningstar SDS		
	(1)	(2)	(3)	(4)	(5)	(6)
	Panel C: Value Consistency					
Overall Stewardship	-0.145			0.098		
	(0.683)			(0.585)		
Board Quality		-1.527	-0.162		-0.812	-0.223
		(0.262)	(0.910)		(0.270)	(0.775)
Corporate Culture		0.186	-0.243		0.354	0.224
		(0.766)	(0.690)		(0.255)	(0.451)
Manager Incentives		1.696 **			1.219 ***	
		(0.048)			(0.007)	
Manager Compensation			-1.999			-0.747
			(0.238)			(0.384)
Manager Ownership			4.545 ***			2.537 ***
			(0.000)			(0.000)
Regulatory History		0.747	-5.802 *		1.583	-3.912 ***
		(0.818)	(0.062)		(0.463)	(0.000)
Net expense ratio		8.538 ***	7.427 ***		4.246 ***	3.741 ***
		(0.000)	(0.000)		(0.000)	(0.000)
Return rank	0.010	-0.006	0.002	-0.004	-0.010	-0.009
	(0.786)	(0.874)	(0.947)	(0.820)	(0.553)	(0.627)
Ln(Age)	0.035	-1.622	-1.059	0.300	-0.460	-0.588
	(0.986)	(0.413)	(0.587)	(0.753)	(0.617)	(0.503)
Ln(Size)	-3.525 ***	-1.683 *	-2.217 **	-1.810 ***	-0.930 *	-1.103 **
	(0.001)	(0.093)	(0.022)	(0.001)	(0.051)	(0.017)
No of classes	-0.113	-0.261 **	-0.206 **	-0.025	-0.090 *	-0.057
	(0.284)	(0.010)	(0.038)	(0.652)	(0.073)	(0.245)
Turnover ratio	1.928 *	2.070 **	2.079 **	-0.041	0.029	0.046
	(0.071)	(0.038)	(0.047)	(0.928)	(0.943)	(0.911)
Single manager	-1.829 *	-1.329	-1.644 *	-0.906 *	-0.646	-0.774
	(0.095)	(0.187)	(0.087)	(0.089)	(0.187)	(0.101)
Management change	-0.852	-0.535	-0.217	0.012	0.203	0.367
	(0.392)	(0.595)	(0.840)	(0.981)	(0.698)	(0.509)
Size objective	-3.034 ***	-3.304 ***	-2.881 ***	-0.139	-0.236	-0.151
	(0.001)	(0.000)	(0.000)	(0.768)	(0.587)	(0.739)
Value-Growth objective	-8.078 ***	-7.349 ***	-7.928 ***	-2.075 ***	-1.773 ***	-2.241 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
Constant	72.677 ***	50.844 ***	56.025 ***	32.679 ***	21.993 ***	24.919 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Adjusted R-squared	0.199	0.275	0.320	0.077	0.179	0.237
Included observations	437	437	418	437	437	418

Contrary to hypothesis H1d, funds with higher managerial ownership exhibit lower style consistency and are thus more likely to drift. Our findings show that when fund managers invest a significant amount of money in their own fund, they are more likely to deviate from the stated style perhaps in an attempt to maximize the return on their own investment. More importantly, the fact that both the two components of *Manager Incentives* have opposite signs suggests that combining them into one single measure, as is done in Morningstar Stewardship Grade, is inappropriate as their effects are likely to cancel out each other and, in our case, result in an overall positive net effect.

Regulatory History is significant in specifications (3) and (6). Therefore, funds with poor regulatory history in the past tend to have a more lax compliance with their stated style. In line with hypothesis H2, "good citizen" funds with good regulatory history are more likely to manage fundholders' money responsibly by complying with the fund's investment style. Another important stewardship explanatory component is *Net Expense Ratio*, which has a significantly positive coefficient in all specifications. This finding supports hypothesis H3 that funds with higher fees relative to their peers exhibit less style consistency. This finding suggests that higher fees drive fund managers to be more active in finding

investment opportunities that may cause style drift, especially in the face of insufficient investment opportunities of the stated investment style.

Of the control variables, *Size, No. Classes, Turnover, Value-Growth Objective,* and *Size Objective* are significant. Specifically, larger funds and funds that offer more classes of shares are more likely to exhibit style consistency while the reverse is found for funds with a high turnover. The level of style consistency is significantly related to both style objectives. Therefore, both the size and value-growth objectives are effective in constraining fund managers' actual investment style within both the size and value-growth dimensions.

The results are generally intact when we rerun the above regressions for style consistency on the size dimension (Panel B) and the value-growth dimension (Panel C). The stewardship components that remain significant are *Manager Ownership* and *Net expense ratio*. *Regulatory History* is significant in explaining style consistency on the value-growth dimension in Panel C, consistent with hypothesis H2.

Using the holding-based measure of style drift as the dependent variable in Table 5.4 does not materially change our conclusion although the results are more significant, particularly for the Style Consistency Metric (specifications (4) to (6)). We find evidence supporting hypothesis H1 that *Overall Stewardship* is

significantly negative in explaining style consistency in the size dimension (specification (4) in Panel B). Therefore, funds that have better overall stewardship are less likely to exhibit size style drift. Consistent with hypothesis H1a, *Board Quality* is also significant in explaining style consistency in the size dimension, which is consistent with hypothesis H1b.

Net expense ratio is significant across all the panels, as before, suggesting greater style consistency in funds that charge lower fees (in line with hypothesis H3). Although *Regulatory History* is significant in explaining consistency in either the size (Panel B) or value-growth (Panel C) dimension, it is not if the drift were to occur in both dimensions (Panel A). *Manager Incentives* and *Manager Compensation* are significant in specification (3) of Panel A, with an opposite sign to each other.

We note that using stewardship components increases the value of the adjusted R-squared by about two-fold. This suggests that stewardship component measures have a greater explanatory power than the overall stewardship measure for the level of style drift.

Table 5.4
OLS regressions of HBSA style consistency on fund stewardship

Fund actual style is estimated using Holdings-Based Style Analysis (HBSA), and then its consistency is measured using Idzorek and Bertsch (2004) Style Drift Score (SDS) and Style Consistency Metric. Funds with lower scores are more consistent than those with higher scores. Style consistency is measured either in size dimension, value-growth dimension, or combination of both. Results for the style consistency measure for both size and value-growth dimensions, are in Panel A; the style consistency measure for the size dimension, in Panel B; and the style consistency measure for the value-growth dimension, in Panel C. *Overall Stewardship, Board Quality, Corporate Culture, Manager Incentives, Manager Compensation, Manager Ownership, Regulatory History,* and *Fees* are numeric scores of Morningstar stewardship grades. *Net expense ratio* is the percentage of fund assets paid for operating expenses and management fees. *Return rank* is the average of mid-year return rank percentile (for a 4-year observation period) of the fund relative to its peers. *Age* is the number of months since the date of inception of the fund, and *Size* is the fund's total asset under management. *No of classes* is the number of share classes offered by the fund. *Turnover ratio* is the minimum of sales or purchases divided by average monthly net assets. *Single manager* scores one if fund is managed by one manager, and zero otherwise. *Management change* scores one if there was a total change in managers during the observation period (October 2007-September 2011), and zero otherwise. *Size objective* and *Value-Growth objective* scores one if the fund has a specific style objective in terms of size and value-growth respectively, and zero otherwise. *p*-values are reported in parentheses. ***, **, * denote significance levels of 1%, 5% and 10% respectively.

	Idzorek & Bertsch SDS			Style Consistency Metric		
	(1)	(2)	(3)	(4)	(5)	(6)
	Panel A: Overall Style Consistency					
Overall Stewardship	-0.002			0.419		
	(0.991)			(0.299)		
Board Quality		0.366	0.755		0.683	0.832
		(0.556)	(0.283)		(0.584)	(0.534)
Corporate Culture		0.341	0.212		1.630 **	1.353 *
		(0.162)	(0.396)		(0.018)	(0.050)
Manager Incentives		-0.107			-0.457	
		(0.737)			(0.545)	
Manager Compensation			-1.233 *			-1.245
			(0.096)			(0.397)
Manager Ownership			0.753 *			0.522
			(0.062)			(0.628)
Regulatory History		-0.889	-1.076		-0.867	-2.797
		(0.321)	(0.171)		(0.760)	(0.439)
Net expense ratio		3.991 ***	3.662 ***		8.384 ***	7.967 ***
		(0.000)	(0.000)		(0.000)	(0.000)
Return rank	-0.022	-0.029 *	-0.028 *	0.004	-0.008	-0.008
	(0.189)	(0.062)	(0.077)	(0.913)	(0.831)	(0.835)
Ln(Age)	0.408	-0.274	-0.083	-2.678	-3.927 *	-3.949 *
	(0.612)	(0.728)	(0.916)	(0.243)	(0.083)	(0.097)
Ln(Size)	-1.815 ***	-0.850 **	-0.992 **	-2.809 **	-0.667	-0.953
	(0.000)	(0.038)	(0.017)	(0.021)	(0.594)	(0.465)
No of classes	-0.171 ***	-0.235 ***	-0.221 ***	-0.433 ***	-0.529 ***	-0.525 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Turnover ratio	1.727 ***	1.740 ***	1.797 ***	6.096 ***	6.093 ***	6.257 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Single manager	-1.140 ***	-0.776 **	-0.842 **	-1.142	-0.353	-0.630
	(0.002)	(0.026)	(0.023)	(0.249)	(0.698)	(0.504)
Management change	0.150	0.392	0.562	1.564	2.201 *	2.459 **
	(0.725)	(0.327)	(0.202)	(0.210)	(0.071)	(0.047)
Size objective	-1.438 ***	-1.678 ***	-1.532 ***	-1.726	-2.303 **	-2.285 **
	(0.000)	(0.000)	(0.000)	(0.102)	(0.026)	(0.036)
Value-Growth objective	-3.078 ***	-2.787 ***	-2.838 ***	-4.616 ***	-4.103 ***	-4.387 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)
Constant	30.356 ***	18.161 ***	19.416 ***	49.109 ***	22.382 **	26.514 **
	(0.000)	(0.000)	(0.000)	(0.000)	(0.028)	(0.014)
Adjusted R-squared	0.293	0.364	0.374	0.222	0.273	0.281
Included observations	447	447	424	447	447	424

Table 5.4 (Continued)

	Idzorek & Bertsch SDS			Style Consistency Metric		
	(1)	(2)	(3)	(4)	(5)	(6)
	Panel B: Size Consistency					
Overall Stewardship	-0.347 **			-0.674 ***		
	(0.024)			(0.001)		
Board Quality		-0.360	-0.544		-1.670 *	-1.737 *
		(0.536)	(0.425)		(0.057)	(0.059)
Corporate Culture		-0.046	-0.117		-0.562	-0.558
		(0.855)	(0.656)		(0.150)	(0.164)
Manager Incentives		-0.163			0.223	
		(0.625)			(0.667)	
Manager Compensation			0.085			0.643
			(0.900)			(0.468)
Manager Ownership			-0.092			-0.023
			(0.838)			(0.975)
Regulatory History		-0.461	-0.754		-0.435	-3.067 *
		(0.562)	(0.332)		(0.810)	(0.060)
Net expense ratio		4.377 ***	4.326 ***		3.726 ***	3.945 ***
		(0.000)	(0.000)		(0.000)	(0.000)
Return rank	-0.050 ***	-0.059 ***	-0.053 ***	-0.030	-0.040 *	-0.032
	(0.001)	(0.000)	(0.000)	(0.183)	(0.061)	(0.161)
Ln(Age)	-0.957	-1.858 **	-1.966 **	-0.812	-1.841	-2.082 *
	(0.258)	(0.027)	(0.025)	(0.500)	(0.134)	(0.097)
Ln(Size)	-1.104 **	-0.162	-0.218	-1.130 **	-0.464	-0.414
	(0.015)	(0.721)	(0.644)	(0.045)	(0.447)	(0.504)
No of classes	-0.132 ***	-0.200 ***	-0.207 ***	-0.248 ***	-0.305 ***	-0.307 ***
	(0.002)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Turnover ratio	2.112 ***	2.196 ***	2.055 ***	3.331 ***	3.516 ***	3.273 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Single manager	-0.095	0.219	0.164	-0.119	-0.027	-0.026
	(0.810)	(0.579)	(0.689)	(0.852)	(0.968)	(0.970)
Management change	0.800 *	1.027 **	1.011 **	0.892	1.041	1.037
	(0.084)	(0.019)	(0.028)	(0.219)	(0.143)	(0.175)
Size objective	-0.131	-0.385	-0.485	-2.839 ***	-3.007 ***	-3.274 ***
	(0.758)	(0.324)	(0.229)	(0.000)	(0.000)	(0.000)
Value-Growth objective	-1.868 ***	-1.450 ***	-1.552 ***	-2.394 ***	-1.871 ***	-2.049 ***
	(0.001)	(0.007)	(0.006)	(0.001)	(0.009)	(0.006)
Constant	25.128 ***	13.150 ***	14.254 ***	30.412 ***	22.505 ***	22.277 ***
	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)
Adjusted R-squared	0.229	0.304	0.295	0.254	0.278	0.269
Included observations	447	447	424	447	447	424

Table 5.4 (Continued)

	Idzorek & Bertsch SDS			Style Consistency Metric		
	(1)	(2)	(3)	(4)	(5)	(6)
	Panel C: Value Consistency					
Overall Stewardship	0.137			0.260		
	(0.377)			(0.555)		
Board Quality		0.716	1.168		-1.575	-1.458
		(0.269)	(0.115)		(0.374)	(0.461)
Corporate Culture		0.431	0.319		1.640 **	1.333
		(0.131)	(0.274)		(0.046)	(0.113)
Manager Incentives		-0.192			-0.979	
		(0.593)			(0.313)	
Manager Compensation			-1.337			-1.597
			(0.111)			(0.382)
Manager Ownership			0.652			0.182
			(0.137)			(0.894)
Regulatory History		-2.169 *	-1.732 *		-0.727	-1.007
		(0.081)	(0.086)		(0.806)	(0.829)
Net expense ratio		3.111 ***	2.751 ***		5.786 ***	5.450 **
		(0.000)	(0.000)		(0.006)	(0.017)
Return rank	0.003	-0.002	-0.003	0.085 *	0.076	0.067
	(0.877)	(0.894)	(0.856)	(0.077)	(0.108)	(0.170)
Ln(Age)	0.345	-0.134	0.110	-2.500	-3.479	-2.826
	(0.700)	(0.880)	(0.903)	(0.325)	(0.181)	(0.315)
Ln(Size)	-1.730 ***	-0.884 **	-1.011 **	-2.512 *	-0.962	-1.337
	(0.000)	(0.047)	(0.025)	(0.064)	(0.525)	(0.401)
No of classes	-0.162 ***	-0.216 ***	-0.201 ***	-0.409 ***	-0.415 ***	-0.424 ***
	(0.002)	(0.000)	(0.000)	(0.005)	(0.003)	(0.004)
Turnover ratio	1.729 ***	1.716 ***	1.832 ***	6.022 ***	6.080 ***	6.410 ***
	(0.002)	(0.002)	(0.002)	(0.000)	(0.000)	(0.000)
Single manager	-1.068 **	-0.745 *	-0.799 *	-0.944	-0.626	-0.930
	(0.015)	(0.073)	(0.067)	(0.462)	(0.608)	(0.462)
Management change	-0.093	0.123	0.313	2.625 *	3.189 **	3.502 **
	(0.850)	(0.798)	(0.545)	(0.091)	(0.046)	(0.041)
Size objective	-2.158 ***	-2.374 ***	-2.151 ***	-5.981 ***	-6.522 ***	-6.248 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Value-Growth objective	-3.374 ***	-3.159 ***	-3.106 ***	-7.818 ***	-7.306 ***	-7.187 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	27.355 ***	16.831 ***	17.665 ***	52.392 ***	35.173 ***	38.267 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.004)	(0.003)
Adjusted R-squared	0.271	0.307	0.305	0.239	0.254	0.249
Included observations	447	447	424	447	447	424

Table 5.5 reports the results for an alternative measure of style consistency, which is style dispersion. We look at the overall style dispersion, style dispersion in the size dimension, and style dispersion in the value-growth dimension. Results show that *Overall Stewardship* is significant only for size style dispersion (specification (4)). Therefore, funds with high overall stewardship have lower style dispersion in the size dimension.

Board Quality has a significantly negative coefficient in almost all the specifications, suggesting that funds with higher board quality are more constrained in their style and thus exhibit lower style dispersion. There is evidence that *Corporate Culture* also does well in constraining fund style dispersion (specifications (5) and (6)).

The remaining results are mostly consistent with those reported earlier for the various style consistency measures. The size dispersion regressions have by far the highest goodness of fit, suggesting that the set of explanatory variables that we test perform best in explaining style dispersion in the size dimension.

Despite the negative association between style drift and fund stewardship (except for managerial ownership), we should be aware of potential endogeneity problems that might affect the causal interpretation. It is possible, for example, that funds strive to improve their style consistency and stewardship

Table 5.5
OLS regressions of style dispersion on fund stewardship

Style dispersion measures the average degree of scatter of the holdings during the observation period (October 2007-September 2011). Funds with lower scores have less scattered stock holdings than those with higher scores. Style dispersion is measured either along size dimension, value-growth dimension, or combination of both. *Overall Stewardship, Board Quality, Corporate Culture, Manager Incentives, Manager Compensation, Manager Ownership, Regulatory History,* and *Fees* are numeric scores of Morningstar stewardship grades. *Net expense ratio* is the percentage of fund assets paid for operating expenses and management fees. *Return rank* is the average of mid-year return rank percentile (for a 4-year observation period) of the fund relative to its peers. *Age* is the number of months since the date of inception of the fund, and *Size* is the fund's total asset under management. *No of classes* is the number of share classes offered by the fund. *Turnover ratio* is the minimum of sales or purchases divided by average monthly net assets. *Single manager* scores one if fund is managed by one manager, and zero otherwise. *Management change* scores one if there was a total change in managers during the observation period (October 2007-September 2011), and zero otherwise. *Size objective* and *Value-Growth objective* scores one if the fund has a specific style objective in terms of size and value-growth respectively, and zero otherwise. *p*-values are reported in parentheses. ***, **, * denote significance levels of 1%, 5% and 10% respectively.

	Overall Dispersion			Size Dispersion			Value Dispersion		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Overall Stewardship	-1.134			-2.045***			-0.149		
	(0.149)			(0.002)			(0.819)		
Board Quality		-9.181***	-11.056***		-8.422***	-9.282***		-5.984***	-7.637***
		(0.000)	(0.000)		(0.000)	(0.002)		(0.004)	(0.001)
Corporate Culture		-1.882	-1.541		-2.819**	-2.614**		-0.655	-0.353
		(0.145)	(0.252)		(0.014)	(0.026)		(0.525)	(0.743)
Manager Incentives		1.715			0.838			1.660	
		(0.329)			(0.605)			(0.264)	
Manager Compensation			6.512**			2.868			5.926**
			(0.036)			(0.304)			(0.029)
Manager Ownership			-1.141			-0.496			-0.847
			(0.637)			(0.819)			(0.659)
Regulatory History		9.214*	6.819		7.596**	6.317**		6.104	4.189
		(0.057)	(0.308)		(0.025)	(0.041)		(0.124)	(0.527)
Net expense ratio		-6.430*	-4.817		-4.648	-3.663		-4.820	-3.510
		(0.078)	(0.207)		(0.157)	(0.282)		(0.116)	(0.268)
Return rank	0.067	0.069	0.041	-0.089	-0.093	-0.126*	0.132***	0.136***	0.122**
	(0.272)	(0.271)	(0.545)	(0.175)	(0.183)	(0.094)	(0.009)	(0.008)	(0.024)
Ln(Age)	-10.414***	-9.993***	-9.766***	-11.017***	-11.144***	-11.352***	-4.938*	-4.403	-3.971
	(0.002)	(0.004)	(0.008)	(0.000)	(0.001)	(0.001)	(0.081)	(0.130)	(0.187)
Ln(Size)	5.690***	3.751**	3.762**	5.174***	3.389**	3.351**	3.587***	2.350*	2.397*
	(0.000)	(0.016)	(0.017)	(0.000)	(0.014)	(0.016)	(0.003)	(0.097)	(0.093)
No of classes	-0.322	-0.197	-0.280	-0.234	-0.149	-0.193	-0.196	-0.104	-0.172
	(0.134)	(0.336)	(0.183)	(0.289)	(0.495)	(0.384)	(0.258)	(0.535)	(0.335)
Turnover ratio	2.457	2.892*	2.811	5.498***	6.153***	6.491***	-0.652	-0.525	-0.864
	(0.184)	(0.096)	(0.132)	(0.002)	(0.001)	(0.001)	(0.708)	(0.753)	(0.633)
Single manager	0.191	-1.481	-1.779	-0.710	-2.065	-2.040	0.602	-0.586	-0.946
	(0.925)	(0.464)	(0.392)	(0.688)	(0.255)	(0.273)	(0.740)	(0.745)	(0.609)
Management change	3.964**	3.572*	3.159	0.948	0.563	0.371	4.329**	4.071**	3.705**
	(0.045)	(0.054)	(0.113)	(0.591)	(0.743)	(0.839)	(0.013)	(0.015)	(0.034)
Size objective	-17.593***	-16.704***	-17.573***	-24.031***	-23.427***	-24.482***	-6.384***	-5.677***	-6.060***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Value-Growth objective	-0.251	0.522	0.282	0.147	0.869	0.468	0.323	0.828	0.836
	(0.902)	(0.798)	(0.896)	(0.944)	(0.659)	(0.822)	(0.867)	(0.676)	(0.696)
Constant	128.177***	158.818***	158.612***	75.139***	100.802***	102.742***	100.940***	122.276***	120.580***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Adjusted R-squared	0.246	0.269	0.263	0.389	0.398	0.401	0.084	0.100	0.091
Included observations	395	395	378	395	395	378	395	395	378

concurrently during the observation period because of common factors such as regulatory requirement or competitive necessity. Another potential concern is reverse causality where funds aim to improve their stewardship entirely following their successful effort to increase components of stewardship which are particularly related to fund monitoring such as Board Quality. However, this reverse causality is asymmetrical as it is unlikely that low style consistency leads to poorer fund governance as a whole.

5.4 Robustness Checks

To check the robustness of our results, we re-estimate specifications (4) to (6) of RBSA style consistency (Table 5.3) using split sample based on fund objectives, i.e. whether a fund has objective in Size or Value-Growth dimension. The results are presented in Table 5.6, where specifications (1) to (3) report the results for subsample with Size Objective, and specifications (4) to (6) for subsample with the Value-Growth Objective.

Consistent with our previous results, in any dimension of style consistency (Panels A to C), the signs and significance of *Manager Ownership* and *Manager Compensation* are maintained in both subsamples (specifications (3) and (6)), where *Manager Ownership* has a significantly positive coefficient and *Manager Compensation* has a significantly negative one (except for Value Consistency where both sample

Table 5.6
Sub-sample analyses of style consistency

This table reports the regression results of style consistency on fund stewardship variables for two sub-samples, i.e. funds with size objective (column 1-3) and funds with value-growth objective (column 4-6). Fund actual style is estimated using Return-Based Style Analysis (RBSA), and then its consistency is measured using Morningstar Style Drift Score (SDS) method. Funds with lower SDS are more consistent than those with higher scores. SDS is measured either in size dimension, value-growth dimension, or combination of both. Results for Overall SDS are in Panel A; Size SDS in Panel B; and Value SDS in Panel C. *Overall Stewardship, Board Quality, Corporate Culture, Manager Incentives, Manager Compensation, Manager Ownership,* and *Regulatory History* are numeric scores of Morningstar stewardship grades. *Net expense ratio* is the percentage of fund assets paid for operating expenses and management fees. *Return rank* is the average of mid-year return rank percentile (for a 4-year observation period) of the fund relative to its peers. *Age* is the number of months since the date of inception of the fund, and *Size* is the fund's total asset under management. *No of classes* is the number of share classes offered by the fund. *Turnover ratio* is the minimum of sales or purchases divided by average monthly net assets. *Single manager* scores one if fund is managed by one manager, and zero otherwise. *Management change* scores one if there was a total change in managers during the observation period (October 2007-September 2011), and zero otherwise. *Size objective* and *Value-Growth objective* scores one if the fund has a specific style objective in terms of size and value-growth respectively, and zero otherwise. *p*-values are reported in parentheses. ***, **, * denote significance levels of 1%, 5% and 10% respectively.

	Size Objective			Value-Growth Objective		
	(1)	(2)	(3)	(4)	(5)	(6)
	Panel A: Overall Style Consistency (Morningstar SDS)					
Overall Stewardship	-0.586 *			-0.140		
	(0.051)			(0.518)		
Board Quality		-2.441 **	-0.674		-0.774	0.582
		(0.017)	(0.524)		(0.390)	(0.551)
Corporate Culture		0.103	-0.423		0.260	-0.023
		(0.854)	(0.457)		(0.481)	(0.949)
Manager Incentives		0.967			1.558 **	
		(0.301)			(0.011)	
Manager Compensation			-3.216 ***			-2.540 **
			(0.005)			(0.011)
Manager Ownership			2.979 ***			3.496 ***
			(0.003)			(0.000)
Regulatory History		1.394	-1.473		0.926	-2.536 **
		(0.364)	(0.162)		(0.629)	(0.027)
Net expense ratio		7.434 ***	6.175 ***		6.873 ***	5.891 ***
		(0.000)	(0.000)		(0.000)	(0.000)
Return rank	-0.024	-0.045	-0.052	-0.005	-0.019	-0.019
	(0.503)	(0.192)	(0.188)	(0.819)	(0.337)	(0.362)
Ln(Age)	0.053	-1.346	-1.510	0.169	-1.131	-1.117
	(0.979)	(0.511)	(0.453)	(0.893)	(0.353)	(0.305)
Ln(Size)	-2.271 **	-0.775	-1.343	-2.102 ***	-0.664	-0.903 *
	(0.014)	(0.432)	(0.152)	(0.002)	(0.267)	(0.095)
No of classes	0.023	-0.030	0.047	-0.045	-0.165 ***	-0.111 **
	(0.852)	(0.782)	(0.667)	(0.508)	(0.005)	(0.047)
Turnover ratio	-0.610	-0.392	-0.980	0.779	0.838	0.968
	(0.506)	(0.630)	(0.249)	(0.211)	(0.158)	(0.105)
Single manager	-1.345	-0.873	-0.664	-0.762	-0.526	-0.422
	(0.186)	(0.335)	(0.437)	(0.226)	(0.338)	(0.437)
Management change	-0.458	0.225	-0.018	-0.059	0.180	0.348
	(0.651)	(0.808)	(0.987)	(0.926)	(0.777)	(0.604)
Size objective	-4.696 ***	-2.633 ***	-2.796 ***			
	(0.000)	(0.010)	(0.003)			
Value-Growth objective				-1.457 **	-1.227 **	-0.856 *
				(0.012)	(0.019)	(0.088)
Constant	49.751 ***	29.966 ***	37.775 ***	40.173 ***	23.344 ***	25.699 ***
	(0.000)	(0.003)	(0.000)	(0.000)	(0.000)	(0.000)
Adjusted R-squared	0.167	0.364	0.427	0.079	0.287	0.354
Included observations	143	143	134	331	331	320

Table 5.6 (Continued)

	Size Objective			Value-Growth Objective		
	(1)	(2)	(3)	(4)	(5)	(6)
	Panel B: Size Consistency (Morningstar SDS)					
Overall Stewardship	-0.838 ***			-0.202		
	(0.002)			(0.298)		
Board Quality		-3.543 ***	-2.321 **		-0.925	0.162
		(0.000)	(0.022)		(0.287)	(0.859)
Corporate Culture		0.376	0.007		0.092	-0.129
		(0.496)	(0.991)		(0.781)	(0.688)
Manager Incentives		0.428			1.095 **	
		(0.618)			(0.038)	
Manager Compensation			-3.065 ***			-2.415 ***
			(0.004)			(0.006)
Manager Ownership			1.862 **			2.668 ***
			(0.045)			(0.000)
Regulatory History		1.449	1.658 *		1.798	0.908
		(0.235)	(0.059)		(0.105)	(0.147)
Net expense ratio		6.184 ***	5.326 ***		5.696 ***	4.902 ***
		(0.000)	(0.000)		(0.000)	(0.000)
Return rank	-0.057 *	-0.073 **	-0.073 **	-0.008	-0.020	-0.017
	(0.079)	(0.015)	(0.041)	(0.737)	(0.279)	(0.381)
Ln(Age)	1.077	-0.040	0.051	-0.240	-1.345	-1.286
	(0.468)	(0.979)	(0.973)	(0.823)	(0.214)	(0.195)
Ln(Size)	-0.632	0.588	0.291	-1.298 **	-0.127	-0.271
	(0.392)	(0.488)	(0.729)	(0.013)	(0.792)	(0.550)
No of classes	-0.032	0.000	0.060	-0.099 *	-0.197 ***	-0.151 ***
	(0.766)	(0.996)	(0.621)	(0.088)	(0.001)	(0.007)
Turnover ratio	0.683	1.186 *	0.553	0.988 *	1.024 *	1.050 **
	(0.375)	(0.074)	(0.452)	(0.068)	(0.052)	(0.048)
Single manager	-0.630	-0.473	-0.294	-0.179	-0.026	0.084
	(0.454)	(0.553)	(0.705)	(0.725)	(0.958)	(0.867)
Management change	-0.858	0.015	-0.146	0.032	0.226	0.385
	(0.338)	(0.985)	(0.872)	(0.951)	(0.652)	(0.458)
Size objective	-1.898 *	0.035	-0.038			
	(0.076)	(0.969)	(0.965)			
Value-Growth objective				-1.418 ***	-1.233 ***	-0.922 **
				(0.004)	(0.007)	(0.031)
Constant	24.960 ***	6.814	11.307	26.861 ***	13.491 ***	14.959 ***
	(0.001)	(0.450)	(0.215)	(0.000)	(0.005)	(0.002)
Adjusted R-squared	0.088	0.279	0.328	0.070	0.257	0.315
Included observations	143	143	134	331	331	320

Table 5.6 (Continued)

	Size Objective			Value-Growth Objective		
	(1)	(2)	(3)	(4)	(5)	(6)
	Panel C: Value Consistency (Morningstar SDS)					
Overall Stewardship	-0.221			0.096		
	(0.417)			(0.596)		
Board Quality		-1.434	-0.449		-0.185	0.678
		(0.163)	(0.701)		(0.814)	(0.436)
Corporate Culture		-0.001	-0.417		0.534	0.312
		(0.998)	(0.448)		(0.104)	(0.331)
Manager Incentives		1.446 *			1.362 ***	
		(0.086)			(0.010)	
Manager Compensation			-1.202			-1.266
			(0.321)			(0.166)
Manager Ownership			2.694 ***			2.728 ***
			(0.006)			(0.000)
Regulatory History		0.690	-1.719		-0.294	-3.541 ***
		(0.665)	(0.115)		(0.880)	(0.000)
Net expense ratio		4.934 ***	4.199 ***		4.668 ***	3.966 ***
		(0.000)	(0.001)		(0.000)	(0.000)
Return rank	0.013	-0.005	-0.015	0.008	0.001	-0.001
	(0.703)	(0.888)	(0.692)	(0.679)	(0.958)	(0.958)
Ln(Age)	-0.816	-1.752	-1.917	0.286	-0.524	-0.541
	(0.658)	(0.353)	(0.326)	(0.781)	(0.602)	(0.561)
Ln(Size)	-1.785 **	-0.813	-1.129	-1.757 ***	-0.741	-0.922 *
	(0.025)	(0.338)	(0.191)	(0.002)	(0.154)	(0.059)
No of classes	0.006	-0.057	-0.024	-0.003	-0.078	-0.049
	(0.957)	(0.566)	(0.812)	(0.956)	(0.104)	(0.315)
Turnover ratio	-1.702 *	-1.654 **	-1.808 **	0.073	0.136	0.334
	(0.054)	(0.042)	(0.032)	(0.888)	(0.779)	(0.479)
Single manager	-1.614 *	-1.275	-1.188	-0.946 *	-0.747	-0.703
	(0.076)	(0.145)	(0.173)	(0.095)	(0.142)	(0.163)
Management change	-0.055	0.311	0.236	-0.327	-0.114	-0.017
	(0.950)	(0.730)	(0.821)	(0.551)	(0.842)	(0.977)
Size objective	-4.343 ***	-2.866 ***	-2.923 ***			
	(0.000)	(0.005)	(0.003)			
Value-Growth objective				-0.873	-0.681	-0.375
				(0.104)	(0.182)	(0.465)
Constant	39.060 ***	27.294 ***	31.950 ***	29.720 ***	17.227 ***	18.971 ***
	(0.000)	(0.002)	(0.001)	(0.000)	(0.001)	(0.000)
Adjusted R-squared	0.158	0.281	0.298	0.052	0.194	0.238
Included observations	143	143	134	331	331	320

and subsamples give insignificant coefficients). However, the significance of *Manager Incentives* (specifications (2) and (5)) is hold for both subsamples only in Value Consistency (Panel C), as it turns out to be insignificant for subsample with Size Objective in the overall and size dimensions. This is also the case for *Regulatory History* whose significant negative coefficient is only maintained in Value-Growth subsample. One explanation for this is the number of observations of Size Objective subsample which is relatively smaller than the Value-Growth counterpart.

5.5 Additional Tests

In this section we report additional tests using principal component analysis (PCA). PCA has been used in corporate governance literature to identify a small number of underlying factors (dimensions) of corporate governance (Ammann, Oesch, and Schmid, 2011; Chen and Chen, 2012; Larcker, Richardson, and Tuna, 2007). Applying PCA to the stewardship components, we obtain five dimensions of stewardship that explain all variance in the original stewardship grades. Table 5.7 reports the results of PCA, which we restrict to factor loadings in excess of 0.1 in absolute terms.

Table 5.7
Factor analysis of fund stewardship

Factor analysis is carried out on the components and subcomponents of Morningstar Stewardship Grades, i.e. *Board Quality, Corporate Culture, Manager Compensation, Manager Ownership,* and *Regulatory History*. Loadings are obtained using principal factor method. Factor loadings less than |0.1| are set to blank.

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Eigenvalue	1.637	1.150	0.938	0.730	0.545
Percentage explained	0.327	0.230	0.188	0.146	0.109
Board Quality	0.578	-0.381			-0.715
Corporate Culture	0.487	0.392	-0.123	-0.724	0.265
Manager Compensation	0.531	-0.452		0.351	0.623
Manager Ownership	0.296	0.586	-0.499	0.538	-0.174
Regulatory History	0.244	0.391	0.855	0.238	

The first factor indicates the overall quality of fund stewardship since it has positive loadings on all stewardship components and strong correlation with Morningstar Overall Stewardship Grade (r=0.83). For that reason, we name this factor as *General Stewardship* (to make a distinction to Morningstar 'Overall Stewardship'). The second factor shows positive loadings for *Corporate Culture*, *Manager Ownership*, and *Regulatory History*, and negative loadings for *Board Quality* and *Manager Compensation*. As such, the factor seems to capture Investment Venture versus Investment Monitoring of fund managers and board. Since this thesis focus on the monitoring role of fund stewardship, we name the second factor as *Investment Monitoring* (instead of Investment Venture) and alter the factor score signs from negative to positive and vice versa. Following Gutmann (1954) and Kaiser (1960, 1961), we do not take into account factors with eigenvalues

below one. Thus, we focus on the first two factors of stewardship, which explain 55.7 percent of the total variance in the stewardship grades.

Next, we examine the relation between style consistency (based on RBSA and style dispersion) and stewardship factors. Style drift is measured using the methods in Idzorek and Bertsch (2004) and Morningstar, style dispersion is measured using Morningstar Style Dispersion Metric, while stewardship factors consist of *General Stewardship* and *Investment Monitoring*. We run regressions of the drift measures on those two factors, and report the results in Tables 5.8.

Consistent with our previous findings, *General Stewardship* has significant negative association with style dispersion especially in size dimension. While we do not find significant relationship between overall dispersion and *Overall Stewardship* in previous test, here we find significant negative relationship between those variables. These results indicate that fund stewardship in general concerns more in monitoring the scatter of the portfolio holdings within the period, especially in size dimension. However, there is no evidence that the monitoring role of stewardship matters in controlling holdings dispersion.

For more elaborate tasks such as style drift monitoring, *Investment Monitoring* has a significant negative coefficient in all dimensions regardless the drift measure used. On the contrary, *General Stewardship* is not found affecting drift,

Table 5.8
OLS regressions of style consistency/dispersion on stewardship factors

This table reports the regression results of style consistency and style dispersion on the first two factors. Fund actual style is estimated using Return-Based Style Analysis (RBSA), and then its consistency is measured using Style Drift Score (SDS) method in Idzorek and Bertsch (2004) and Morningstar. Funds with lower SDS are more consistent than those with higher scores. Style Dispersion Metric measures the average degree of scatter of the holdings during the observation period (October 2007-September 2011). Funds with lower scores have less scattered stock holdings than those with higher scores. SDS and Style Dispersion Metric are measured either in size dimension (Size), value-growth dimension (Value), or combination of both (Overall). *Net expense ratio* is the percentage of fund assets paid for operating expenses and management fees. *Return rank* is the average of mid-year return rank percentile (for a 4-year observation period) of the fund relative to its peers. *Age* is the number of months since the date of inception of the fund, and *Size* is the fund's total asset under management. *No of classes* is the number of share classes offered by the fund. *Turnover ratio* is the minimum of sales or purchases divided by average monthly net assets. *Single manager* scores one if fund is managed by one manager, and zero otherwise. *Management change* scores one if there was a total change in managers during the observation period (October 2007-September 2011), and zero otherwise. *Size objective* and *Value-Growth objective* scores one if the fund has a specific style objective in terms of size and value-growth respectively, and zero otherwise. *p*-values are reported in parentheses. ***, **, * denote significance levels of 1%, 5% and 10% respectively.

	Style Dispersion Metric			Idzorek & Bertsch SDS			Morningstar SDS		
	Overall	Size	Value	Overall	Size	Value	Overall	Size	Value
Factor 1: General Stewardship	-1.747 **	-2.345 ***	-0.706	-0.041	0.035	-0.056	0.100	0.071	0.128
	(0.048)	(0.002)	(0.317)	(0.919)	(0.924)	(0.892)	(0.668)	(0.722)	(0.528)
Factor 2: Investment Monitoring	0.182	0.067	0.135	-1.523 ***	-1.688 ***	-1.114 **	-1.018 ***	-0.935 ***	-0.664 **
	(0.833)	(0.925)	(0.854)	(0.002)	(0.000)	(0.022)	(0.001)	(0.000)	(0.012)
Net expense ratio	-4.002	-2.366	-3.212	12.200 ***	12.085 ***	9.046 ***	6.849 ***	6.044 ***	4.507 ***
	(0.264)	(0.461)	(0.283)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Return rank	0.044	-0.120	0.123 **	-0.018	-0.059 *	0.003	-0.026	-0.036 *	-0.010
	(0.498)	(0.106)	(0.021)	(0.610)	(0.092)	(0.943)	(0.172)	(0.065)	(0.578)
Ln(Age)	-9.801 ***	-11.481 ***	-3.935	-1.859	-4.098 *	-1.009	-0.912	-1.416	-0.527
	(0.007)	(0.001)	(0.191)	(0.387)	(0.058)	(0.610)	(0.425)	(0.176)	(0.561)
Ln(Size)	4.365 ***	3.992 ***	2.761 *	-1.876 **	-0.627	-1.744 *	-1.022 **	-0.259	-0.865 *
	(0.006)	(0.006)	(0.052)	(0.037)	(0.472)	(0.063)	(0.030)	(0.571)	(0.055)
No of classes	-0.193	-0.086	-0.129	-0.327 ***	-0.485 ***	-0.210 **	-0.155 **	-0.200 ***	-0.071
	(0.357)	(0.692)	(0.463)	(0.003)	(0.000)	(0.037)	(0.011)	(0.002)	(0.153)
Turnover ratio	2.665	6.605 ***	-1.104	3.254 ***	4.625 ***	1.761 *	0.967 **	1.582 ***	-0.204
	(0.154)	(0.000)	(0.547)	(0.001)	(0.000)	(0.092)	(0.045)	(0.001)	(0.654)
Single manager	-0.739	-1.235	-0.187	-0.768	0.197	-1.593 *	-0.231	0.486	-0.735
	(0.722)	(0.500)	(0.918)	(0.370)	(0.817)	(0.099)	(0.625)	(0.291)	(0.116)
Management change	3.769 *	1.130	3.996 **	0.388	2.160 **	-0.363	1.088 *	1.389 ***	0.205
	(0.059)	(0.530)	(0.023)	(0.699)	(0.028)	(0.720)	(0.051)	(0.007)	(0.687)
Size objective	-0.483	-0.022	0.231	-8.523 ***	-4.549 ***	-7.789 ***	-2.428 ***	-1.172 *	-2.200 ***
	(0.824)	(0.992)	(0.912)	(0.000)	(0.001)	(0.000)	(0.000)	(0.082)	(0.000)
Value-Growth objective	-17.770 ***	-24.913 ***	-6.069 ***	-3.881 ***	-3.477 ***	-3.318 ***	-1.087 **	-1.517 ***	-0.329
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.012)	(0.001)	(0.448)
Constant	136.034 ***	76.245 ***	108.884 ***	57.217 ***	38.204 ***	49.859 ***	28.726 ***	15.165 ***	23.062 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
Adjusted R-squared	0.242	0.390	0.074	0.417	0.358	0.303	0.336	0.290	0.211
Included observations	378	378	378	418	418	418	418	418	418

which is consistent with our previous results based on return-based approach. These findings suggest that fund stewardship has a significant role in investment monitoring especially in the continuous monitoring of style drift over periods. In sum, our results provide evidence that funds stewardship matters to style monitoring, both in the monitoring of holdings dispersion and style consistency.

CHAPTER 6

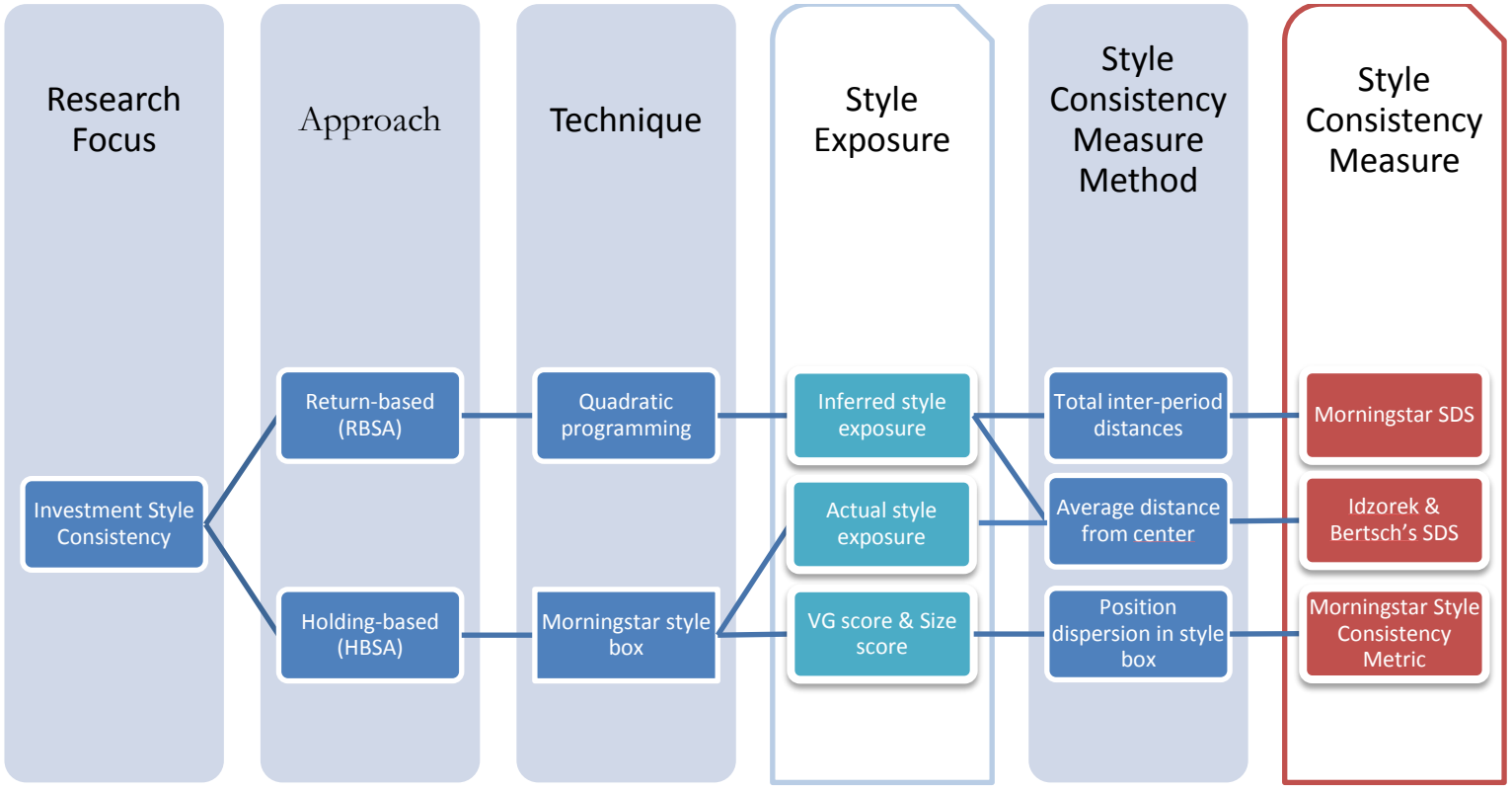
SUMMARY AND CONCLUSIONS

This thesis examines the relationship between fund stewardship quality and style drift for a sample of 464 U.S. mutual fund companies. Although there is only weak evidence showing a negative association between *overall* fund stewardship and style drift, the results are more convincing for the individual stewardship component measures. In most specifications, we find *Net expense ratio*, *Regulatory History*, and the subcomponents of *Manager Incentives,* i.e., *Manager Compensation* and *Manager Ownership* are significant in explaining fund drift. We also provide evidence that *Board Quality* and *Corporate Culture* are significant in explaining style drift particularly in the size dimension. The results are robust irrespective of how we measure style drift – style consistency or style dispersion. Therefore, in this thesis we are able to provide the first solid evidence that better fund stewardship can better ensure that the fund board undertakes its fiduciary duties, including increased monitoring of the fund investment style.

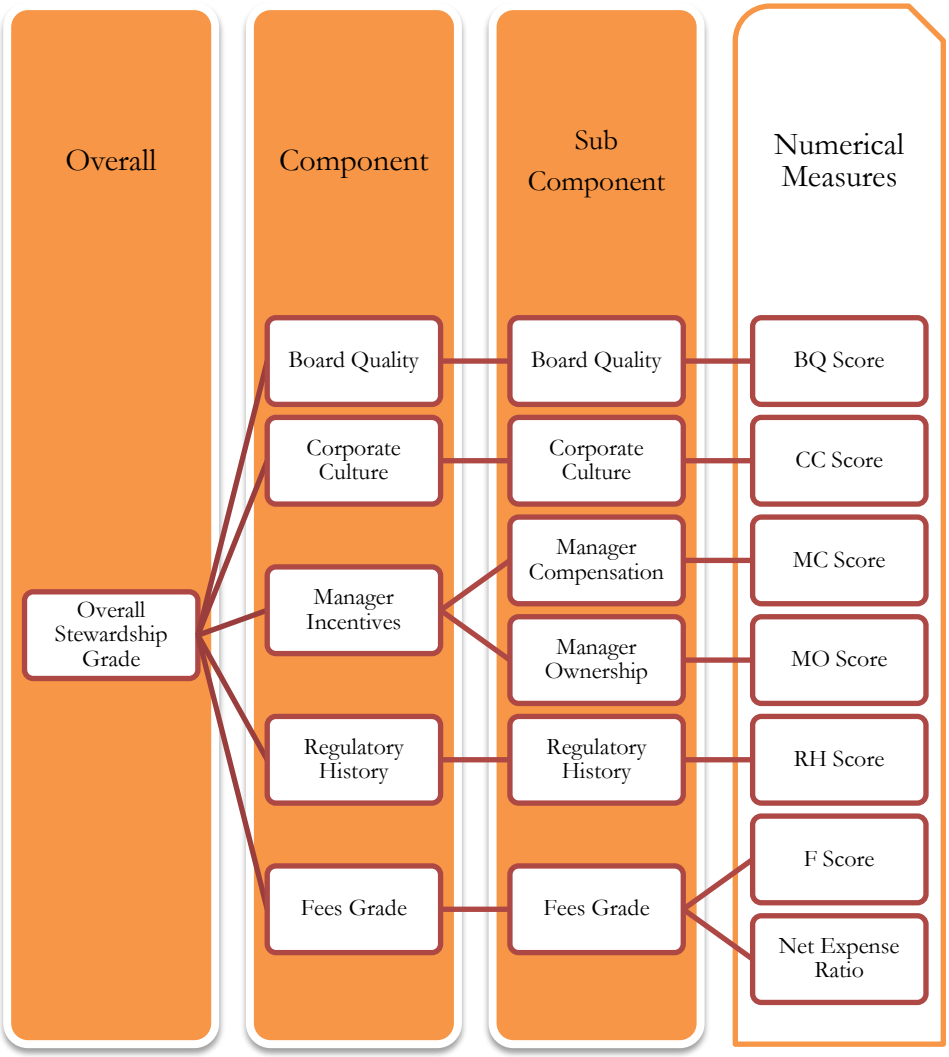
Our results have two important implications for research using MS Grade. First, the individual stewardship components have greater explanatory power than the overall stewardship score, at least in explaining style drift. This implies

that the individual components should be used in future tests of fund stewardship. The second implication is that the two components of *Manager Incentives* (i.e. *Manager Compensation* and *Manager Ownership*) are distinct and have different effects on style drift. Therefore, combining them into a single measure, as is done by MS Grade, is not appropriate. These components should therefore be treated separately in empirical tests.

Appendix A
Approaches, techniques, and measurement methods for style consistency



Appendix B
Morningstar stewardship measures



References

Ammann, M., Oesch, D., and Schmid, M.M. (2011). Corporate governance and firm value: International evidence. *Journal of Empirical Finance, 18*(1), 36-55.

Bär, M., Kempf, A., and Ruenzi, S. (2005). Team management and mutual funds. CFR Working Paper No. 05-10. Retrieved from: http://ssrn.com/abstract=809484

Barberis, N., and Shleifer, A. (2003). Style investing. *Journal of Financial Economics, 68*(2), 161-199.

Bhagat, S., Carey, D., and Elson, C.M. (1999). Director ownership, corporate performance, and management turnover. *Business Lawyer, 54*(3), 885-919.

Bogle, J.C. (2009). The challenge to mutual fund stewardship. In John A. Haslem (Eds.), *Mutual Funds: Portfolio Structures, Analysis, Management, and Stewardship* (pp. 283-304). Hoboken: Wiley.

Brown, S.J., and Goetzmann, W.N. (1997). Mutual fund styles. *Journal of Financial Economics, 43*(3), 373-399.

Brown, K.C., Harlow, W.V., and Starks, L.T. (1996). Of tournaments and temptations: An analysis of managerial incentives in the mutual fund industry. *Journal of Finance, 51*(1), 85-110.

Brown, K.C., Harlow, W.V., and Zhang, H. (2012). Investment style volatility and mutual fund performance. Retrieved 1 October 2012 from:

http://www2.mccombs.utexas.edu/faculty/keith.brown/Research/stylevolatility-wp.pdf

Casavecchia, L., and Tooman, A. (2011). Managerial herding, investors sensitivity, and the role of mutual fund internal governance. Presented at Finance and Corporate Governance Conference 2011. Retrieved from: http://ssrn.com/abstract=1711667

Chan, L.K.C., Chen, H-L and Lakonishok, J., (2002). On mutual fund investment styles, *Review of Financial Studies, 15*(5), 1407-1437.

Chen, S.S., and Chen, I.J., (2012). Corporate governance and capital allocations of diversified firms. *Journal of Banking & Finance, 36*(2), 395-409.

Chen, Q., Goldstein, I., and Jiang, W. (2008). Directors' ownership in the U.S. mutual fund industry. *Journal of Finance, 63*(6), 2629-2677.

Chevalier, J. and Ellison, G. (1997). Risk taking by mutual funds as a response to incentives. *Journal of Political Economy, 105*(6), 1167-1200.

Chou, W.-H., Ng, L., and Wang, Q. (2011). Are better governed funds better monitors? *Journal of Corporate Finance*, *17*, 1254–1271.

Christopherson, J.A., and Sabin, F.C. (1999). How effective is effective mix? *Journal of Investment Consulting, 1*(1), 39-50.

Cooper, M.J., Gulen, H., and Rau, P.R. (2005). Changing names with styles: Mutual fund name changes and their effects on fund flows. *Journal of Finance, 60*(6), 2825-2858.

Cremers, M., Driessen, J., Maenhout, P., and Weinbaum, D. (2009). Does skin in the game matter? Director incentives and governance in the mutual fund industry. *Journal of Financial and Quantitative Analysis, 44*(6), pp.1345-1373.

Davis, J.L., Payne, G.T., and McMahan, G.C. (2007). A few bad apples? Scandalous behavior of mutual fund managers. *Journal of Business Ethics, 76*(3), 319-334.

Del Guercio, D., Dann, L., and Partch, M. (2003). Governance and boards of directors in closed-end investment companies. *Journal of Financial Economics, 69*(1), 111-152.

Del Guercio, D., and Tkac, P.A. (2003). Star Power: The Effect of Morningstar Ratings on Mutual Fund Flows. Unpublished manuscript, Federal Reserve Bank of Atlanta. Retrieved 15 June 2011 from: http://www.frbatlanta.org/filelegacydocs/ wp0115.pdf

diBartolomeo, D., and Witkowski, E. (1997). Mutual fund misclassification: Evidence based on style analysis. *Financial Analysts Journal, 53*(5), 32-43.

Dow, J., and Gorton, G., (1997). Noise trading, delegated portfolio management, and economic welfare. *Journal of Political Economy, 105*(5), 1024-1050.

Evans, A.L. (2008). Portfolio manager ownership and mutual fund performance. *Financial Management, 37*(3), 513-534.

Fama, E., and Jensen, M. (1983). Separation of ownership and control. *Journal of Law and Economics, 26*(2), 301-325.

Ferris, S.P., and Yan, X. (2007a). Agency conflicts in delegated portfolio management: Evidence from namesake mutual funds. *Journal of Financial Research, 30*(4), 473-494.

Ferris, S.P., and Yan, X. (2007b). Do independent directors and chairmen matter? The role of boards of directors in mutual fund governance. *Journal of Corporate Finance, 13*(2-3), 392-420.

Frankel, T. (2006). United States mutual fund investors, their managers and distributors. In L. Thevenoz and R. Bahar (eds.), *Conflicts of Interest: Corporate Governance and Financial Market* (pp.363-394). Netherlands: Kluwer Law International.

Frijns, B., Gilbert, A., and Zwinkels, R.J.C. (2012). On the style switching behavior of mutual fund managers. SSRN eLibrary. Retrieved from: http://ssrn.com/abstract=2114094

Gallo, J.G., and Lockwood, L.J. (1997). Benefits of proper style classification of equity portfolio managers. *Journal of Portfolio Management, 23*(3), 47-55.

Gallo, J.G., and Lockwood, L.J. (1999). Fund management changes and equity style shifts. *Financial Analysts Journal, 55*(5), 44-52.

Gordon, G.G., and DiTomaso, N. (1992). Predicting corporate performance from organizational culture. *Journal of Management Studies, 29*(6), 783-798.

Gottesman, A., and Morey, M. (2012). Mutual fund corporate culture and performance. *Review of Financial Economics, 21*(2), 69-81.

Guttman, L. (1954). Some necessary conditions for common factor analysis. *Psychometrika, XIX*, 149-61

Hardy, R.S. (2003). Style analysis: A ten year retrospective and commentary. In T. Daniel Coggin and Frank J. Fabozzi (Eds.), *The Handbook of Equity Style Management* (pp. 109-128). n.p.: John Wiley and Sons.

Haslem, J.A. (2009). Identifying mutual fund stewardship. In John A. Haslem (Eds.), *Mutual Funds: Portfolio Structures, Analysis, Management, and Stewardship* (pp. 305-316). Hoboken: Wiley.

Huang, Y., and Chen, C. (2011). Mutual fund governance and performance: A quantile regression analysis of Morningstar's stewardship grade. Presented at 2011 Annual Meeting of The Midwest Finance Association, Chicago. Retrieved 15 June 2011 from: www.mfa2011.com/papers/MFA%20submission.pdf

Huang, J., Sialm, C., and Zhang, H. (2011). Risk shifting and mutual fund performance. *Review of Financial Studies*, *24*(8), 2575-2616.

Idzorek, T.M., and Bertsch, F. (2004). The style drift score. *Journal of Portfolio Management, 31*(1), 76-83.

Investment Company Institute. (2007). Why do mutual fund investors use professional financial advisers? *ICI Research Fundamentals, 16*(1), 1-8.

Investment Company Institute. (2012). 2012 Investment Company Fact Book. n.p.: Author.

Independent Director Council. (2012). Oversight of fund performance and fees: Portfolio management and performance. Retrieved 1 March 2013 from: http://fundamentals.idc.org/oversight/oversight_portfolio

Independent Director Council. (n.d.). Frequently asked questions about mutual fund directors. Retrieved 15 June 2011 from: http://www.idc.org/idc/policy/governance /ci.faq_fund_gov_idc.idc

Investment Advisers Act of 1940 § 211, 15 U.S.C. § 80b-1 et seq. (2010).

Investment Company Act of 1940 § 36, 15 U.S.C. § 78a et seq. (2010).

Investment Company Names, 17 C.F.R. pt 270 (2001).

Jensen, M.C. (1989). The eclipse of the public corporation. *Harvard Business Review, 67*(5), 61–74.

Jensen, M.C., and Meckling, W.H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics, 3*(4), 305–360.

Kaiser, H. F. (1960). The application of electronic computers to factor analysis. *Educational and Psychological Measurement, 20*, 141-51.

Kaiser, H. F. (1961). A note on Guttman's lower bound for the number of common factors. *British Journial of Psychology, 14*, 1-2.

Khorana, A. (2001). Performance changes following top management turnover: evidence from open-end mutual funds. *Journal of Financial and Quantitative Analysis, 36*(3), 371-393.

Khorana, A., Servaes, H., and Wedge, L. (2007). Portfolio manager ownership and fund performance. *Journal of Financial Economics, 85*(1), 179-204.

Kim, M., Shukla, R., and Tomas, M. (2000). Mutual fund objective misclassification. *Journal of Economics and Business, 52*(4), 309–323.

Lai, S., Tiwari, A., and Zhang, Z. (2010). Mutual fund flows, performance persistence, and board quality. SSRN eLibrary. Retrieved from: http://ssrn.com/abstract=1570525

Larcker, D.F., Richardson, S.A., and Tuna, I. (2007). Corporate Governance, Accounting Outcomes, and Organizational Performance. *The Accounting Review, 82*(4), 963-1008

Lucas, L., and Riepe, M.W. (1996). The role of returns-based style analysis: Understanding, implementing, and interpreting the technique. Retrieved 15 June 2011 from: http://www.ifa.com/Media/Images/PDF%20files/styledriftibbotson.pdf

Lutton, L.P., Rushkewicz, K., Liu, K., and Ling, X. (2011). The 2011 mutual fund stewardship grade research paper. n.p.: Morningstar, Inc. Retrieved 15 April 2011 from:

http://corporate.morningstar.com/us/documents/methodologydocuments/MethodologyPapers/StewardshipGradeMethodology.pdf

Ma, L., Tang, Y., and Gomez, J.-P. (2013). Portfolio manager compensation in the U.S.. mutual fund industry. Unpublished manuscript, Georgia State University. Retrieved from: https://student.gsu.edu/~ytang9/MF_Compensation.pdf

Mahoney, P.G. (2004). Manager-investor conflicts in mutual funds. *Journal of Economic Perspectives, 18*(2), 161-182.

Massa, M., and Patgiri, R. (2009). Incentives and mutual fund performance: Higher performance or just higher risk taking? *Review of Financial Studies, 22*(5), 1777-1815.

Mehran, H. (1995). Executive compensation structure, ownership, and fund performance. *Journal of Financial Economics, 38*, 163-184.

Meschke, F. (2007). An empirical examination of mutual fund boards. Retrieved from: http://ssrn.com/abstract=676901

Miller, J., and Phillips, M.M. (1995). Watch for style drift in 401(k) investment options. *Pension Management, 31*(11), 50.

Morningstar. (2011). Morningstar stewardship grade for fund firms. Retrieved 15 April 2011 from: http://corporate.morningstar.com/us/documents/MethodologyDocuments/FactSheets/StewardshipGradeForFundFirms.pdf

Nelson, D., Wells, W.H., Perry, K.J., and Hanson, D. (2004). Best practices implementation in mutual funds. *Journal of Financial Regulation and Compliance, 13*(1), 81-86.

North American Securities Administrators Association. (n.d.). Investment Adviser Guide. Retrieved 15 June 2011 from: http://www.nasaa.org/industry_regulatory_resources/investment_advisers/456.cfm

O'Reilly, C.A., and Chatman, J.A. (1996). Culture as social control: Corporations, culture , and commitment. In Staw, B.M. and Cummings, L.L. (Eds.), *Research in Organizational Behavior, 18* (pp.157-200). Greenwich, CT: JAI Press.

Radin, R.F., and Stevenson, W.B. (2006). Comparing mutual fund governance and corporate governance. *Corporate Governance: An International Review, 14*(5), 367-376.

Rothstein, Kass & Company. (2011). Investment adviser registration, regulatory and compliance issues and tax legislation affecting the private investment community. Retrieved 1 March 2013 from: http://www.rkco.com/Corporate/Admin/AttachmentFiles/webinars/Lowenstein%20Sandler%20and%20Rothstein%20Kass%20Webinar%20February%2010%202011.pdf

S&P Dow Jones Indices. (2010). S&P indices versus active funds (SPIVA) scorecard, Year-end 2009. Retrieved 1 March 2013 from: http://www.spindices.com/documents/spiva/spiva-us-year-end-2012.pdf

SEC. (2011). SEC charges multiple hedge fund managers with fraud in inquiry targeting suspicious investment returns. Retrieved 1 March 2013 from: http://www.sec.gov/news/press/2011/2011-252.htm

SEC. (2012). In the matter of top fund management, Inc. and Barry C. Ziskin. Retrieved 1 March 2013 from: http://www.sec.gov/litigation/admin/2012/33-9377.pdf

SEC Office of Economic Analysis. (2006). Office of economic analysis memorandum: Literature review on independent mutual fund chairs and directors. Retrieved 15 April 2011 from: http://www.sec.gov/rules/proposed/s70304/ oeamemo122906-litreview.pdf

Securities Act of 1933 § 11, 15 U.S.C. § 77a et seq. (2010).

Shareholder Reports and Quarterly Portfolio Disclosure of Registered Management Investment Companies, 17 C.F.R. pt 210, 239,249,270, and 274 (2004).

Sharpe, W.F. (1988). Determining a funds effective asset mix. *Investment Management Review, 2*, 59-69.

Sharpe, W.F. (1992). Asset allocation: Measurement style and performance measurement. *Journal of Portfolio Management, 18*, 7-19.

Sorensen, J.B. (2002). The strength of corporate culture and the reliability of firm performance. *Administrative Science Quarterly, 47*(1), 70-91.

Spencer, R.D. (1997). Monitoring style drift presents different problems for sec. 401(k), defined benefit plan sponsors. *Employee Benefit Plan Review, 51*(7), 38-40.

Standard & Poor's Financial Services. (2013). Standard & Poor's indices versus active (SPIVA), Retrieved 1 March 2013 from: http://www.standardandpoors.com/indices/spiva/en/us

Starks, L.T. (1987). Performance incentive fees: An agency theoretic approach. *Journal of Financial and Quantitative Analysis, 22*(1), 17-32.

Tkac, P.A. (2004). Mutual funds: Temporary problem or permanent morass? *Federal Reserve Bank of Atlanta Economic Review, 89*(4), 1-21.

Tufano, P., and Sevick, M. (1997). Board structure and fee-setting in the U.S. mutual fund industry. *Journal of Financial Economics, 46*(3), 321-355.

Wermers, R. (2012). Matter of style: The causes and consequences of style drift in institutional portfolios. Unpublished manuscript, University of Maryland. Retrieved from: http://ssrn.com/abstract=2024259